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THE SECTION ON RADIOLOGY *

FRED M. HODGES, M.D.
RICHMOND, VA.

Highly technical papers should, I believe, be read before special societies and published in our two national publications. The papers of this section should be published by THE JOURNAL, where they will get the greatest circulation and will be of the greatest educational value. THE JOURNAL wants papers on subjects which are of general interest and feels that highly technical papers which are only of interest to specially trained radiologists should be published elsewhere. It must not be forgotten that the majority of medical men who graduated more than ten years ago and many who have graduated since that time are surprisingly unfamiliar with the value of the x-rays in the diagnosis and treatment of many conditions familiar to the radiologist. The Radiological Society, the American Roentgen Ray Society and the American College of Radiology do not have the opportunity of putting our work before the general medical profession as does this body. Here we have a wonderful opportunity to present to the general profession the possibilities of radiology in the diagnosis and treatment of disease and it should be the duty of the secretary to choose with discrimination the papers that are to be presented before the section.

The second field in which the usefulness of this section can be highly developed is the sponsoring of educational work on radiology; an outstanding example of this is seen in the splendid efforts of its members in providing scientific exhibits in radiology for these meetings. We all know that this section through its committee on exhibits, largely as the result of the work of Dr. Hickey, has been putting on excellent exhibits. Already this has been of great value to radiology in general and we should certainly continue to take an active part in this work and try, as far as possible, to arrange for instructive scientific exhibits. Authors should be urged to supplement their papers by an exhibition in the Scientific Exhibit of films that form a basis for their papers. During the past three years there were twice as many applications for papers on therapy as on diagnosis, and radiology will probably be more rapidly advanced if there are more papers on diagnosis than on therapy.

The third responsibility that must be assumed by the members of this section is by no means the least important: cooperation with the American Medical Association in standardization of hospital x-ray departments. Sante [1] has recently clearly and sanely outlined the position the specialty of radiology should and must occupy in hospitals and in private practice if there is to be the proper amount of progress in this specialty. I believe that radiology already reaches these ideals in many places throughout the country and that this body can help a great deal by educating the profession and the public to the fact that a real radiologist has to be more than a photographer. He should be a very versatile general practitioner specializing in radiology. All of us know that no specialty in medicine requires a greater knowledge of general practice than does radiology and that it requires as long a time to become proficient in this work as it does in any other branch of medicine. A great part of the general medical profession, however, does not realize this and some physicians feel that a six weeks' course will make them fairly familiar with x-ray work. Recently two interns from different universities asked me where they could go after their hospital service was completed to take a four or five weeks' course in radiology so that they could do their own x-ray work. They had been taught a good deal of physics, something about transformers, Coolidge tubes and fractures but had not been shown much about the pathologic changes demonstrated by the x-rays. Evidently many schools are not giving their students the proper idea of the large field of usefulness of the x-rays in diagnosis and treatment.

If a radiologist is to be treated as a consultant, he must function as a consultant. What the referring physician desires is all the information he can get, and if a little extra effort on our part will aid in establishing the diagnosis, even though we are not paid for the extra work, I believe that it is our duty to do it. For instance, if a patient is referred for the usual stereoscopic examination of the chest and we feel after examining these films that a lateral examination of the chest would help us to make a diagnosis, we should go on and complete the examination regardless of the charge. In most x-ray offices or departments it is absolutely necessary to use technicians, but every patient should be seen personally by some radiologist unless the examination is purely a routine one. If we want to be consultants we must be just that and not laboratory workers.

Not a little of the fault with the standing of radiologic services of hospitals today lies in misguided hospital boards, who, in their attempt to make a profit from the radiologic service, place their x-ray departments in the hands of young, low salaried inexperienced men, appropriating their fees for the general hospital fund.

We cannot expect a highly trained and efficient surgeon or internist to have the proper respect for an inefficient radiologist. If young men with little experience in this specialty are willing to accept small salaries in full time positions, how can we expect other than

* Chairman's address, read before the Section on Radiology at the Eighty-First Annual Session of the American Medical Association, Detroit, June 25, 1930.

1. Sante, L. R.: The Relation of a Hospital Department of Radiology to the Private Radiologist, Am. J. Surg. 8: 1056 (May) 1930.

that radiology in general will suffer, just as surgery would suffer if hospital boards should hire their surgeons on the same basis; the whole of medicine can be subjugated in this same manner, but at what a terrible loss to the advancement of medical science. To bring all this into as few words as possible, would it not be possible for this section, since it represents all of our x-ray societies, to try to effect some common understanding through the Council of the American Medical Association for the mutual guidance of hospital representatives and radiologists in the administration of hospital radiology departments throughout the country? If indeed this could be accomplished, it would insure the position of the radiologist and would do much for the advancement of the science of radiology.

1000 West Franklin Street.

A NEWER CONCEPTION OF NUTRITION *

WILLIAM WESTON, M.D., DR.P.H.
COLUMBIA, S. C.

Clemenceau, in his savage arraignment of medieval Christianity and the intolerance of theologians of that period in one of the brilliant chapters of his book "In the Evening of My Thought," pays science a worthy tribute. He writes: "Science has made doubt reputable." It is difficult fully to comprehend this tribute from a man like the "Old Tiger"; although a devoted disciple of science, in several distinct branches he was constantly at war with scientists and at no time during his long and tempestuous life could it be truthfully said that he had been affected by its spirit as to either patience or tolerance.

In what I present here I must assume that in the study of scientific subjects the spirit of science has not failed to be imbibed and absorbed, because a part of what I shall say will be devoted to a brief analysis and criticism of some of the time-honored expressions and methods that I feel have been discredited by discoveries made in the laboratories of physiologic chemistry, particularly the South Carolina Food Research Laboratory, with which I am connected and with which, consequently, I am most familiar.

Probably the greatest discovery that I have to record is that we have learned that knowledge of foods is far from complete. It cannot be said that full information is available on a single one of the numerous mineral elements. There is a fair amount of information in regard to the relative importance and function of some of them, but no real knowledge of quite a number that are constant, though variable constituents of foods and of the body ash. Among the more important of these are arsenic, fluorine, silicon, sulphur, boron and cobalt. I believe that each one of these elements has definite functions to perform, but no one has offered convincing proof of what these functions are. It may be that they are only stabilizers or catalizers. It is presumed that in time with the intensive work that is being done in the laboratories in the effort to elucidate this subject a clearer conception of their functions should be had.

Knowledge of the vitamins is incomplete as to their number, their functions, their sources and their relationship to one another and to the mineral elements.

Foods grown in different sections of the country and in different localities of the same section show great variations in their chemical constituents. Despite these facts, well informed physicians are constantly speaking of, and even writing about, "a balanced diet" as if it were a scientific reality.

It is presumed that what is meant is that the diet must consist of milk, fruit, a cereal, vegetables and perhaps one of a variety of meats. Regardless of what is meant, the expression is misleading and unscientific.

A brief analysis of this diet list will develop the following facts: First, either orange juice or tomato juice may be taken as an example of fruit. Both of them when allowed to ripen on the vine or tree is of distinctly superior value as a source of vitamins A and C and probably B than when artificially ripened by ethylene gas or by exposure to the air and sunshine.[1] If the relative value is considered, then of naturally ripened oranges or tomatoes the following differences will be found: The two are about equal in their vitamin C value with the advantage somewhat in favor of the tomato as to vitamins A and B. Their mineral values are given in table 1. I am not in possession of the figures for the iodine content of California oranges, but it may be assumed to be low, as it has been invariably found to be in other foods grown in that state.

An additional advantage that tomato juice, either canned or fresh, possesses over orange juice is that the average infant can take several times as much tomato juice as orange juice without manifesting ill effects.[2]

In prescribing cereals it is exceptional to differentiate between whole grain cereals and those from which the germ and the cortical portions have been removed. When these portions are removed from the grain, practically all the value except the carbohydrate is taken away and they become powerful decalcifying agents regardless of their variety. Most of the so-called breakfast foods, such as Cream of Wheat and Farina, belong to this class.[3] Attention has recently been called to the powerful decalcifying influence of oatmeal.[4]

TABLE 1.—*Mineral Values of California Oranges and South Carolina Tomatoes*

	Parts per Million			
	Iodine	Iron	Manganese	Copper
California oranges *	.....	70.5	7.6	4.75
Tomatoes grown in South Carolina	166.5	160.0	26.7	15.3

* Personal communication to the author from R. E. Remington, Food Research Laboratory.

Our studies in milk have been conducted from a somewhat different point of view than has been customary. Despite the importance of a definite knowledge of the fats, carbohydrates and proteins, I feel that in the evaluation of milk their importance has been overestimated and the chemical elements—vitamins and mineral salts—have been undervalued. This attitude by students of nutrition may be accounted for by the fact that at an early period in the development of the science of nutrition and before the determining rôle that the chemical elements played in the processes of nutrition was appreciated, they were named "accessory food factors." This misleading classification is still in use.

* Chairman's address, read before the Section on Diseases of Children at the Eighty-First Annual Session of the American Medical Association, Detroit, June 25, 1930.

1. Jones, D. B., and Nelson, E. M.: Ethylene-Treated Tomatoes, Am. J. Pub. Health **20**: 387-394 (April) 1930. Rosa, J. T.: Ripening Tomatoes, Proc. Am. Soc. Hort. Sc. **22**: 315, 1925. Morgan, Agnes Fay; and Smith, Laura Lee W.: Development of Vitamin A During Ripening of Tomatoes, Proc. Soc. Exper. Biol. & Med. **26**: 44 (Oct.) 1928. House, Margaret C.: Nelson, P. Mabel; and Haber, E. S.: The Vitamin A, B and C Content of Artificially Versus Naturally Ripened Tomatoes, J. Biol. Chem. **81**: 495 (March) 1929.
2. Hess, A. F.: Scurvy, Past and Present.
3. Weston, William: Cereal Foods: Their Advantages and Dangers, J. S. Carolina M. A. **20**: 765-769 (Oct.) 1927.
4. Mellanby, Mrs. Edward: Diet and Teeth: Experimental Study, Part 1, Dental Structure in Dogs.

A relatively large decrease may occur in the fats, carbohydrates and proteins of milk and not be followed by such serious consequences as when this happens to the vitamins and certain of the mineral salts.

It is customary by writers and most convenient to venders of milk to mention the ash as if it were a substance rather than as separate and distinct elements,

TABLE 2.—*Mineral Values of Milk*

		On Dry Basis					
Milk	Dry Matter, per Cent	Calcium P.P.M.	Phosphorus P.P.M.	Iron P.P.M.	Manganese P.P.M.	Copper P.P.M.	Iodine P.P.M.
Merrell-Soule lactic acid	....	9,500	6,960	12	..	2.79	30
	....	9,500	7,240	14	..	2.79	34
Merrell-Soule protein	....	8,160	6,420	12	..	2.15	27
	....	7,980	6,480	15	..	2.15	28
	....	.....	.....	..	..	....	40
Klim	....	9,300	6,900	12	..	2.08	33
	....	9,500	7,100	14	..	2.08	40
Newberry (skimmed)	....	.....	.....	..	..	....	646
	....	15,000	7,170	18	..	2.09	505
	....	14,800	7,240	24	..	2.08	500
	....	.....	.....	..	..	....	530
	7.59	.....	.....	..	..	....	494
Mead's dry milk	....	9,120	7,100	13	..	3.85	65
	....	9,300	7,240	13	..	3.83	50
	....	.....	.....	..	..	....	101
	....	.....	.....	..	..	....	94
Greenville (skimmed)	....	18,900	6,330	51	..	2.02	840
	....	18,500	6,400	53	..	1.96	862
	7.55	.....	.....	..	..	....	...
Carnation evaporated	....	10,500	7,180	40	..	....	330
	....	10,700	7,020	49.5	..	3.84	313
	....	.....	.....	57	..	....	...
	....	.....	.....	48	..	....	...
Borden's evaporated	....	10,700	7,060	66	..	....	95
	....	10,300	7,070	56.5	..	2.68	...
	....	.....	.....	50	..	....	...
S. M. A.	....	4,850	3,790	69	..	....	207
	....	4,650	3,830	60	..	4.50	211
	....	.....	.....	72	..	....	...
Protein S. M. A.	....	.....	.....	..	..	....	272
	....	.....	.....	..	..	....	219
	....	.....	.....	..	..	....	329
Lactogen	....	6,260	5,030	49	..	2.01	95
	....	6,840	5,010	49.75	..	1.99	100
Pet	....	10,600	6,940	127.5	..	....	52
	....	10,400	6,900	124	..	1.99	...
	....	.....	.....	106	..	....	...
Gold Cross	....	10,800	6,830	72	..	....	165
	....	10,400	6,700	76	..	....	...
Horlick's malted milk	....	.....	.....	..	..	....	93
	....	.....	.....	..	..	....	95
Similac	....	.....	.....	..	..	....	39
	....	.....	.....	..	..	....	40

each with its function to perform in the processes of nutrition. A relatively large number of these elements have been studied with a sufficient thoroughness to convince us of their great and indispensable value. Some are apparently of more importance than others; among these are iodine, iron, manganese and copper. It was concluded before the analyses were begun that greater good would probably be accomplished if we made an intensive study of the milk in order to ascertain to what extent, if any, the average supply of the country was deficient in these elements. Should this information be obtained, the low hemoglobin and low metabolism rates so frequently observed in infants could be explained.

Dr. Remington and his associates in the South Carolina Food Research Laboratory, in collaboration with Dr. McClendon of the University of Minnesota, have conducted a very careful study of milk from the more important dairying sections of the country. As a result we possess information of great value in explaining the causes of nutritional anemia and the increasing incidence of manifestations that we have learned to associate with a deficiency of iron in the food supply.

Table 2 shows so definitely the deficiencies in the more widely advertised milk preparations that should there be an occasion to use any one of them the table can be referred to in order that they may be corrected by supplying the deficiency in their organic relation.

Unfortunately the exact iron, copper and iodine requirements of infants at different ages is not known but if Greenville milk is taken as a standard, one will not likely go far wrong, because this milk contains an abundance of iodine and apparently a sufficient amount of iron and copper. It is claimed that when this milk is fed in the same proportion as any other milk neither a low hemoglobin nor a low metabolism rate occurs.

We have analyzed hundreds of samples of vegetables from important vegetable growing sections of the United States. Much of this work has been done by McClendon, and with a similar object in view, as was the case in our study of milk. We find an impressive variation in the mineral content of vegetables grown in different sections of the country and to a less extent in the same section. The green leafy vegetables are by far the best source of the vitamins and mineral elements. In some sections where the goiter incidence is high it will be observed (table 3) that iodine, even in green leafy vegetables, is present in negligible quantities.

One of the most important advantages that has resulted from our study of the mineral content of vegetables is that a sufficient amount of certain vegetables may now be obtained from known sources and of such enormously high mineral content as to make them available and adequate when used in relatively small portions to overcome the deficiencies that we have found to exist in the nation's milk supply for babies and young children. I shall discuss this matter in detail later.

Analyses made in our laboratory of meats has brought to light important information. It has been known for some time that the internal organs are a better source of the vitamins and mineral salts than are muscle meats. Information from many sources confirms this statement. We believe that the chief benefit to be derived from the use of muscle meats in young children is to add variety to the amino-acids.

Perhaps our most important work at the South Carolina Food Research Laboratory on meats was the discovery of the outstanding value of oysters as a source of the mineral elements. I am incorporating a communication from Dr. Remington which is of interest:

In the accompanying table are given some comparative figures on the mineral content of beef liver, calf liver, hog liver and oysters. The values for liver are taken from the work of Dr. Petersen at the University of Wisconsin with the exception of the iodine content of beef liver, which is from the work of Dr. von Fellenberg in Switzerland. We have tried

TABLE 3.—*Iodine Content of Some Vegetables Grown in South Carolina in Comparison with Those Grown in California and in Oregon* *

	Parts per Billion, Dry Basis		
	South Carolina	California	Oregon
Asparagus	574.5	12.0	....
Green beans	329.0	....	29.0
Spinach	1178.5	26.0	19.5
Beets	357.0	8.0	....
Carrots	466.0	8.5	2.3

* South Carolina Analyses by Remington, others by McClendon.

to find out how much iodine there is in liver but it is so low that by our ordinary methods of work we are not able to get any, although of course there must be some present. The values for oysters are from a sample from Charleston County and we have not complete analyses on more than one sample but these values are probably accurate enough for comparison. I am unable to find any analyses of calcium and phosphorus in liver but I should expect that it would be much lower than oysters in calcium and at least as high or higher in phosphorus. Practically all results of chemical analyses are reported on the dried samples but, since no one eats dried foods, I have recal-

culated these results to show the amounts present in the fresh material. Of course, liver contains only from 65 to 75 per cent of water while oysters contain 90 per cent of water, so that this method of calculating makes a greater reduction in the values on oysters than it does in liver.

The superior value of hog liver will be observed from this communication. Those who have ever looked at a slide of this liver under the microscope and seen the great number of worms present will probably share my antipathy for it.

I think it is the consensus of opinion among pediatricians who are students of nutrition that the generally accepted standards or guides by which they have been taught to determine the well being and development of infants and young children are misleading and inadequate. Infants are often seen who steadily gain in weight and whose growth appears to be satisfactory but whose physical functions and mental faculties do not develop at a rate that may be observed in other infants.

TABLE 4.—*Mineral Content of Beef Liver, Calf Liver, Hog Liver and Oysters on the Dried Sample*

	Iron*	Manganese*	Copper	Iodine†	Calcium*	Phosphorus*
	On the Dried Sample					
Beef liver	294	8.7	75.7	?	.....	.....
Calf liver	203	12.0	164.4	?	.....	.....
Hog liger	800	12.2	20.8	?	.....	.....
Oysters	760	34.0	95.0	16,000	4,400	6,200
	On the Fresh Sample					
Beef liver	83	2.5	21.5	19 to 87	.....	.....
Calf liver	54	3.2	44.1	?	.....	.....
Hog liver	230	3.8	6.5	?	.....	.....
Oysters	76	3.4	9.5	1,600	440	620

* Parts per million.
† Parts per billion.

Many of them have been satisfied to ascribe these manifestations to the influence of heredity and have overlooked the real cause—dietary deficiency. Such infants or children may be found to be victims of an alimentary anemia which may be demonstrated by a low hemoglobin count. It is important in undertaking a study of this nature to keep in mind the differences between anemia and oligemia, because pale, poorly nourished children are frequently seen who have red blood counts of from 4,500,000 to 5,000,000 with a color index below 60 per cent. This is especially apt to be the case when the growth is rapid with a resulting oligemia.

The elements responsible for the manufacture of hemoglobin are stored in the infant's liver and in smaller amounts in the spleen and other organs in variable quantities, as will be observed from the difference in time that it begins to fall in different members of a group of infants. In twins, of course, it is almost invariably the case that anemia exists from birth or shortly thereafter.

The factors concerned in determining the basal metabolism rate have been incorrectly evaluated by the average writer on the subject. Carbohydrates exercise a relatively negative influence on the rate of metabolism, and fats incomparably less than proteins, but none are to be compared to iodine in its organic relation with iron and copper in large amounts as is found in foods from certain sections.

The functions of manganese in the rôle of nutrition is not definitely known, but it is known that when manganese is in relationship with copper it is an effective hemoglobin builder, even where iron is deficient, by more completely utilizing the iron, but it is believed that, when the ratio between iron and manganese is relatively high and there exists a sufficient trace of copper, hemoglobin is more rapidly formed and is probably more resistant to those influences that tend to diminish or destroy it. Therefore, I am inclined to believe the hypothesis that manganese may bear a somewhat similar relation to iron as does copper, the former as a stabilizer and the latter as a catalizer.

With these facts and this hypothesis in mind, spinach was selected for feeding experiments which yielded the following analysis: iron, 543 parts per million; manganese, 140 parts per million; copper, 15 parts per million, and iodine 840 parts per billion.[5]

The spinach was mechanically washed, dried and reduced to a fine powder, so fine, in fact, that when added to the milk formula it could rapidly pass through the small opening of the nipple. It was fed daily to infants, the victims of alimentary anemia, in quantities varying from one-half to one teaspoonful. The amount tolerated in infants is variable. In some a teaspoonful given daily after several days' administration produced a diarrhea, while in others two teaspoonfuls given daily did not seem to influence intestinal peristalsis materially.

In every case of alimentary anemia in which this spinach concentrate has been used there has been a steady improvement, and in a large number of cases the increase in hemoglobin has been spectacular. This material has also been fed to anemic, lactating mothers whose babies were anemic and the milk insufficient to supply the babies' requirements. In such cases the hemoglobin of the mother and of the baby rapidly improved and the milk supply was increased. Perhaps the most striking evidence of improvement was in the baby's disposition and appearance of well being.

From a limited experience I believe that carrot top concentrate and lettuce concentrate possess an equal and under certain circumstances a superior food value to spinach concentrate. A rather extensive area has been found where the lettuce grown contains from 3,600 to 4,800 parts of iron per million and from 800 to 1,000 parts of iodine per billion. The lettuce from this area contains an extraordinarily high percentage of manganese, calcium and phosphorus.

It was incident to the systematic study of the mineral content of vegetables that the great value of carrot tops was discovered. In view of the fact that they had heretofore been considered purely a by-product, our feeding experiments were begun with a distinct feeling of misgiving as we were not sure that they did not contain a poisonous substance. We have used this material in a sufficient number of cases to be assured that no toxic substance exists.

Our feeding experiments in young children with carrot top concentrate and lettuce concentrate has been too limited to justify positive conclusions, but from the limited number of cases in which they have been used we feel that both will occupy a field of distinct usefulness as a reliable source of iodine, manganese, iron and copper. We shall shortly begin feeding experiments on women during the periods of gestation and lactation and the results will be carefully checked, both on the mother and the offspring during the entire period of lactation. These experiments will also be conducted in the several sections of the country. We believe that this work has a promising future, particularly as a prophylaxis of alimentary anemia, the various manifestations of iodine deficiency and the several types of endocrine disease commonly found in young children and believed to be due to a deficiency of one or more of these elements.

5. Remington, R. E.: South Carolina Food Research Laboratory, 1930.

SUMMARY

1. No scientific basis exists for the use of the expression "a balanced diet" unless the chemical composition of the component parts of the diet is known.

2. In all infants and young children whose progress is not entirely satisfactory, a hemoglobin test should be made and the basal metabolism rate determined.

3. In order to promote scientific pediatrics and be able to obtain satisfactory feeding results, the proportion of the mineral elements of the milk the baby is taking must be known.

4. The mineral content of the milk should be improved by adding spinach concentrate, lettuce concentrate or carrot top concentrate in suitable proportions to all milk, regardless of the baby's age, if the hemoglobin is below 75 per cent.

5. Oysters should be investigated as a substitute for liver in conditions and diseases in which liver has been found useful.

1428 Lady Street.

RESULTS OF TONSILLECTOMY

A COMPARATIVE STUDY OF TWENTY-TWO HUNDRED TONSILLECTOMIZED CHILDREN WITH AN EQUAL NUMBER OF CONTROLS THREE AND TEN YEARS AFTER OPERATION *

ALBERT D. KAISER, M.D.

ROCHESTER, N. Y.

Considerable evidence is at hand to convince one of the relationship of infected tonsils to disease in individual children. Removal of the tonsils and adenoids in such children has been followed by striking improvement in the child's general condition or by cessation of recurrent infection which had been attributed to the diseased tonsils. In spite of these outstanding favorable results following tonsillectomy, there still remains in the mind of the critical observer considerable doubt as to the value of this procedure in the great mass of children subjected to this operation. The popularity of this procedure is well known. In urban communities, approximately 50 per cent of the older children have had their tonsils and adenoids removed. No other medical procedure, with the exception of vaccination against smallpox and diphtheria, is as freely offered to the child as tonsillectomy.

One is justified in the query Is this procedure wise and beneficial to the child? Such a query is always pertinent in any public health procedure involving a high percentage of the community. In the case of smallpox and diphtheria it is easily answered, but with tonsillectomy so many factors are involved that evaluation becomes more difficult. Any individual public health procedure must be judged by its effect on reducing mortality and morbidity rates. Its value may not be noted directly, but at least it must influence the factors that have any bearing on death or sickness rates. An effort has been made to study the public health value of tonsillectomy to a large group of unselected children. Interpretation of the results may aid in establishing better the soundness of such a procedure, or show its futility or even its detrimental effects.

The present survey is based on a study of 2,000 children of high school age. One half of these children had tonsil enucleation at the age of 5 or 6 years. They were examined at that time; their complaints and records of infections previous to operation were recorded. The recent examination furnished a similar data for the ten year period subsequent to operation. An equal number of children in whom tonsillectomy was recommended ten years ago, but not performed for various reasons, was likewise examined, and served as controls in this survey. The two groups of 1,000 children each represented children in the same schools and from similar homes. Racially they were equally divided. The operations and reexaminations were done during the winter months in both groups. A similar survey was made on 2,400 children three years after removal of the tonsils. The results of these two surveys are compared.

The complaints commonly associated with tonsils were tabulated and compared with those among the children who were not operated on and who served as controls. The history of infections of each child was obtained, with particular stress laid on the age at which it occurred. Physical defects that have any bearing on the tonsil and adenoid tissue were likewise comparatively listed. Among the children operated on in whom tonsillar tags were still present, especial attention was given to the effect of incomplete operations on the return of preoperative complaints.

Frequent sore throat or tonsillitis is a common complaint in early childhood and is considered an outstanding indication for removal of the tonsils. Both in the 2,200 tonsillectomized children and in the control groups this complaint was characteristic of nearly 40 per cent of the children up to the time of operation, or the fifth or sixth year in the control group. A three year postoperative period when compared with control children showed a decided decrease in the number who suffered from this complaint. Over a ten year period sore throats have had more opportunity to recur, but still the incidence is definitely less in the tonsillectomized children. Ten per cent of that group are now subject to this complaint, while 35 per cent of the control children still have repeated attacks of tonsillitis.

Frequent head colds also occur in about 45 per cent of the children utilized in this study. The three year postoperative period showed a striking reduction in the frequency of this complaint in the tonsillectomized children with a very slight decrease in the control group. The removal of adenoids was undoubtedly a helpful factor in this improvement. When the ten year period is considered, many children who have been operated on are found to be susceptible to frequent head colds. At the conclusion of ten postoperative years, it was discovered that 22 per cent of the operative group are still subject to frequent head colds, in comparison with 30 per cent of the children who were not operated on. To estimate the influence of tonsillectomy on the frequency of head colds, one must allow a sufficient period for observation. The apparent benefit noted in the first few years does not always hold in subsequent years, suggesting that removal of the tonsils does not necessarily confer an immunity and thereby assure much protection against this complaint.

In discussing ear complaints, purulent otitis media alone has been considered in order to judge a definite pathologic condition, rather than subjective complaints such as earache. Fifteen per cent of the 2,200 children operated on had a purulent discharge from the ears prior to operation. The control group at the same ages has approximately 12 per cent. In the group examined

* Read before the joint meeting of the Section on Diseases of Children and the Section on Preventive and Industrial Medicine and Public Health at the Eighty-First Annual Session of the American Medical Association, Detroit, June 26, 1930.

at the end of the three year period, fewer tonsillectomized children developed otitis media. At the conclusion of the ten year period the children who had been operated on showed a slight increase over the controls in the incidence of this complaint. When the entire group of 2,200 tonsillectomized children is considered, it is found that there were more cases of purulent otitis media than in the controls. It must be remembered that children peculiarly susceptible to ear infections are apt to have their tonsils and adenoids removed, which perhaps accounts for the increased number of ear infections in this group. Observations made on selected groups of children not included in this study have shown that removal of the tonsils offers less protection against infection in the ear than is generally supposed. First attacks of ear trouble in children over 8 years of age occur with equal frequency in the children who have been operated on and in those who have not. Recurrent attacks, however, in children under 8 years of age are less likely to occur in children whose tonsils and adenoids have been removed. There is, therefore, still a slight advantage for the tonsillectomized child in combating this complaint.

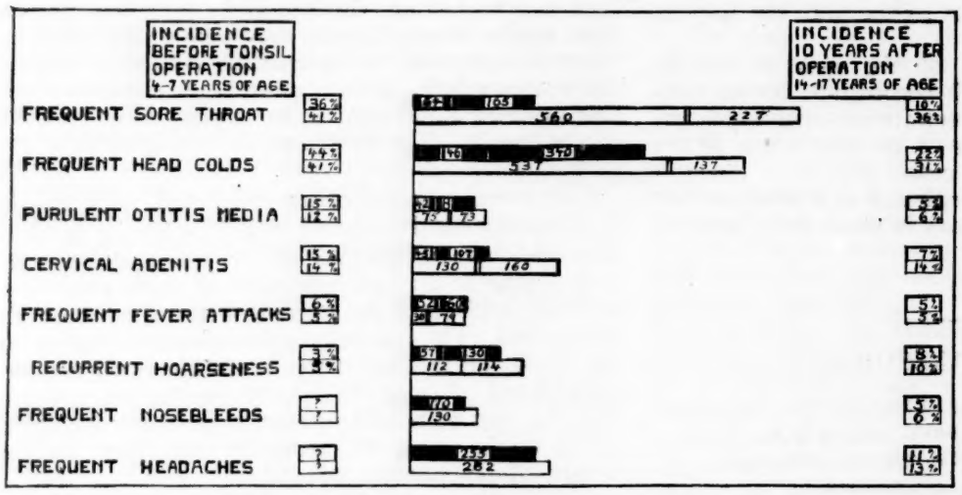


Chart 1.—Incidence of complaints in 2,200 children before tonsillectomy and three and ten years after operation, compared with control groups in which the children were not operated on. The black areas denote tonsillectomized and the white areas nontonsillectomized children examined three and ten years later.

Cervical adenitis occurs in about 15 per cent of the children before the time of operation. This complaint has been considered only when the cervical glands are visibly enlarged. Many more children had slightly enlarged glands, but they have not been considered as suffering from this complaint. In some children the glandular enlargement was an acute infection, while in others the enlargement was of long duration. Both the three year and the ten year postoperative period showed a lessened incidence of this complaint as compared to the controls. Glandular hypertrophy tends to decrease as children reach the adolescent period. There was, however, a striking difference in the reaction to this complaint among the children who had been operated on and those who had not; at the end of the ten year period, 7 per cent of the children whose tonsils were removed were still subject to periodic enlargement of the cervical glands, while among the children not operated on, a similar complaint occurs in 13 per cent.

Frequent attacks of fever occur not uncommonly in children in whom no definite diagnosis can be made. Probably infections of the throat are responsible for some of these attacks. A history of such attacks occurred with equal frequency in the operative and control groups, previous to operation. During the ten year period subsequent to operation, 5 per cent of the children in both groups were still subject to such a complaint. There is no evidence that the tonsils are the cause of such attacks of fever in many cases.

Recurrent attacks of hoarseness or acute laryngitis occur in from 3 to 5 per cent of the children. During the ten years following operation, such attacks occurred less often in the tonsillectomized group. In both groups such attacks were more common after 6 years of age, recorded in 8.5 per cent of children who had been operated on and in 10 per cent of those who had not. Frequent nosebleeds and headaches are occasional complaints in school children, for which tonsils and adenoids are not infrequently removed. The preoperative incidence was not obtained in either group, but for the ten year period nosebleeds and headaches occurred with equal frequency in the two groups. One could assume from the figures that these complaints have little relationship to the tonsils.

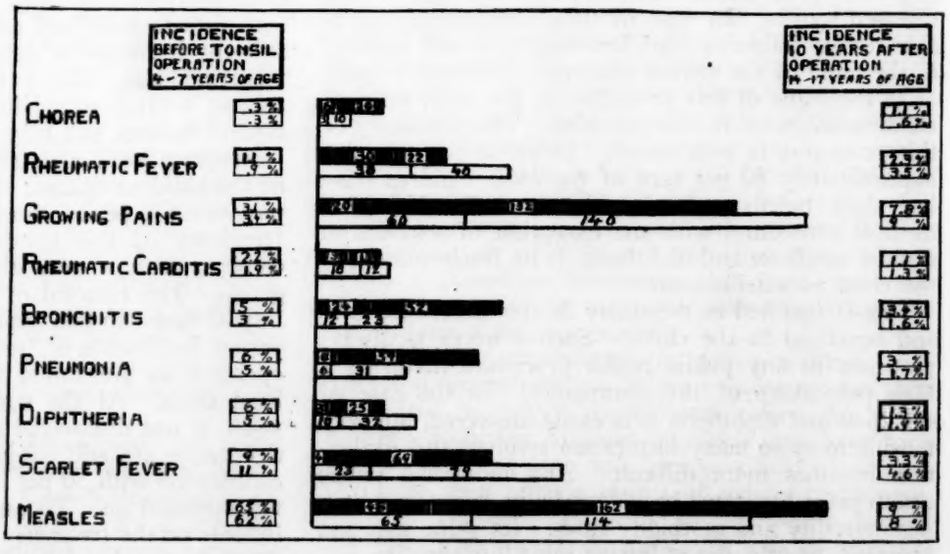


Chart 2.—Incidence of infections in 2,200 children before tonsillectomy and three and ten years after operation, compared with control groups in which the children were not operated on.

Measles occurs with equal frequency in the two groups, more than half the children in both groups having had their attack before 6 years of age. Diphtheria occurred in about 5 per cent of the children before operation in both groups. During the ten year period, 28 cases developed among the 2,400 children operated on and 42 cases among the same number of control children. The prophylactic use of toxin-antitoxin has undoubtedly affected both groups, but it still appears that diphtheria is less likely to occur in tonsillectomized children. The postoperative rate among the latter group is 1.3, and the rate among the controls 1.9, per cent.

Scarlet fever has been reported in 9 per cent of the operative group before operation, and in 11 per cent of the control group, over the same period of time. During the ten year period following operation 73 cases occurred, and in the control group 102 cases. The rate of incidence in the operative group was 3.3 per cent as against 4.6 per cent in the control group. A previous survey of all the school children revealed the fact that scarlet fever occurred in nearly twice as many children whose tonsils were still in, as in tonsillectomized children. It appears that removal of the tonsils offers the child some protection against this infection.

Attacks of bronchitis developed in somewhat more than 4 per cent of the operative group previous to removal of the tonsils. Three per cent of the children who were not operated on had a similar complaint over the same period. During the ten year period following operation, 76 children, or 3.4 per cent, were recorded as still having recurrent attacks of bronchitis, while among the control group 35 children, or 1.6 per cent, were similarly susceptible. Children liable to attacks of bronchitis are not, according to these figures, benefitted by tonsillectomy: in fact they appear to become more susceptible.

With pneumonia, conditions are similar. Approximately 5 per cent of the children in both groups had pneumonia before 6 years of age. During the ten year period sixty-seven, or 3.5 per cent, of the tonsillectomized children had pneumonia, while only thirty-seven, or 1.6 per cent, had the disease among the control children. Removal of the tonsils does not seem to offer protection against this disease and may render some children more susceptible.

The rheumatic manifestations have been divided into chorea, growing pains, rheumatic fever and rheumatic carditis. Chorea occurs with equal frequency in the two groups before operation, but over the ten year period twice as often in the operative group: 1.2 per cent as against 0.6 per cent in the controls. In another survey made on rheumatic manifestations in a much larger group of children, it was found that chorea occurred as often in children who had been operated on as in children who had not. This disease does not seem to be favorably influenced by removal of the tonsils, except that less carditis is associated with chorea occurring in tonsillectomized children. Growing pains, which are now generally conceded to be a mild rheumatic manifestation, were reported in about 3 per cent of the children in both groups before removal of the tonsils. The attacks were more common in both groups during the school age, occurring in 7.8 per cent of the operative group and in 9 per cent of the control group. Rheumatic fever had existed in about 1 per cent of the children of both groups before operation. During the ten year period fifty-two children, or 2.3 per cent, suffered from this disease, while among the control children seventy-eight, or 3.5 per cent, had the complaint. This shows a lessened incidence of rheumatic fever in the tonsillectomized children of about 33 per cent. This reduction is in the primary attacks of rheumatic fever only, for other studies show that recurrent attacks of rheumatic fever are not influenced by tonsillectomy. Rheumatic carditis was found in more children of the operative group before operation but in spite of that was somewhat less common among the children who had been operated on, over the ten year period, the rate being 1.17 per cent as compared with 1.3 per cent among the children not operated on. The lessened incidence of growing pains, rheumatic fever and rheumatic carditis is perhaps influenced by the lessened incidence of sore throat in tonsillectomized children. It is significant, however, that removal of the tonsils affords no better than a 33 per cent escape from a primary attack of rheumatism, and no measurable protection if tonsillectomy is performed after the first attack.

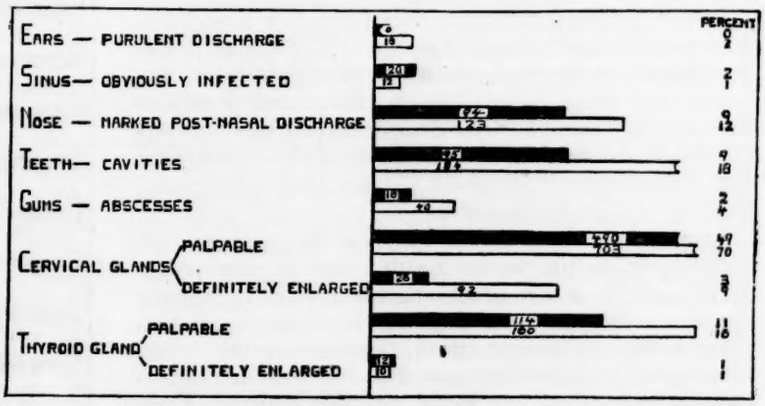


Chart 3.—Comparative physical defects in 1,000 tonsillectomized and 1,000 nontonsillectomized children ten years after tonsillectomy.

Any marked difference in the incidence of complaints and infections in tonsillectomized children and those not operated on should show some difference in the physical examination, especially of the organs influenced by tonsils.

Though infections of the ear were only slightly less frequent over a ten year period in the tonsillectomized children, at the time of examination there were 18 children among the control group with discharging ears, and none among the tonsillectomized group. Of the 1,000 children operated on, 20 had obviously infected sinuses, while 12 of the control group showed the same condition. The presence of a postnasal discharge may not signify any serious pathologic condition. The presence of such a discharge is, however, extremely annoying to many children. Such a condition was found in 94, or 9 per cent, of the tonsillectomized, and in 123, or 12 per cent, of the nontonsillectomized children.

A relationship between infected teeth and tonsils has been mentioned. In the tonsillectomized group untreated cavities were found in 9 per cent of the children, while in children with the tonsils in, similar cavities were found in 18 per cent. Abscess of the gums was found in 2 per cent of the tonsillectomized children and in 4 per cent of the control group. One cannot overlook the possibility that this increase in neglected teeth may be due to parental neglect for the same

reason that some of these children were not tonsillectomized.

The classification of cervical glands in the children was made in two groups: those glands, either anterior or posterior, that were easily palpable, and those that were visibly enlarged. In 1,000 children who were operated on, the cervical glands were palpable in 49 per cent, while in the control group they were palpable in 70 per cent. Definitely enlarged glands were found in 3 per cent of the tonsillectomized children and in 9 per cent of the control children. It must be remembered that the children in both groups were examined during the winter months, when the incidence of glandular enlargement is high. There is, nevertheless, a striking difference in the incidence of this physical condition.

The thyroid gland was likewise classified as normal, palpable or definitely enlarged. Among the tonsillectomized group it was palpable in 11 per cent of the children, and among the control group in 16 per cent. Definite enlargement occurred in 1 per cent of both groups. From these observations there is nothing to suggest a close relationship between the tonsils and the thyroid gland in children.

Lesions of the heart were found in a few more children in the tonsillectomized group. This is due to the fact that at the time of operation more children in this group had such lesions than in the control group at the same age period. The comparison of other physical observations in the two groups showed no difference and have not been reported because they presumably have no bearing on the subject.

In previous surveys the question has arisen: Are failures in postoperative results due to incomplete operation? It is well known that secondary operations are occasionally performed to remove remnants of tonsillar tissue. The operations reported in this study were done by skilled laryngologists; at least ten different operators were employed for this group. Their methods of operating were not similar. Complete enucleation of the tonsils was always attempted and generally the operative result was good. To determine whether the presence of any tonsillar tissue, even though small, influenced in any way the end-results, a notation was made as to the condition of the throat operated on. Tonsils were either completely removed or there remained, ten years after the operation, small fragments of tonsillar tissue listed as tonsillar tags. In many instances these were not large and would be considered of no significance. No account has been made of the lingual tonsil in this classification. Among the 1,000 children, 619 had no evidence of any tonsillar tissue left, while in 381 there was evidence. No effort was made to measure the amount of tissue left, but wherever there was even the smallest piece of tissue left the operation was considered incomplete.

The percentage of complaints has been listed in two groups of complete and incomplete operations. As noted in chart 4, the difference in the frequency of the complaints was not great, although sore throat, head colds, repeated attacks of fever and laryngitis and diphtheria occur somewhat more often in those children in whom the operation was incomplete. A more outstanding difference is noted in the tonsillectomized children who developed otitis media and cervical adenitis. It suggests that these two complaints may occur or recur as readily in children with tonsillar tags as in children who have not been operated on. When these two complaints are not relieved by the operation, it would be well to inspect the throat for remaining infected tonsillar tissue.

Incompletely removed or recurrent adenoid tissue in children from 14 to 16 years of age plays a lesser rôle than it does in younger children. In relatively few children was such a condition found, so that no deduction can be made from the data.

What deduction is justifiable from these assembled data? It is at once apparent that tonsillectomy does not remove from children many or in fact any of the usual hazards of childhood. All of the complaints and infections incident to school life are occurring in children who have been operated on as well as in those who have not. From this as well as from other controlled studies, it is evident that one must abandon the hope that removal of tonsils and adenoids will radically change a child and confer the type of protection so much desired for it. It is also apparent that certain infections are less likely to occur in the tonsillectomized

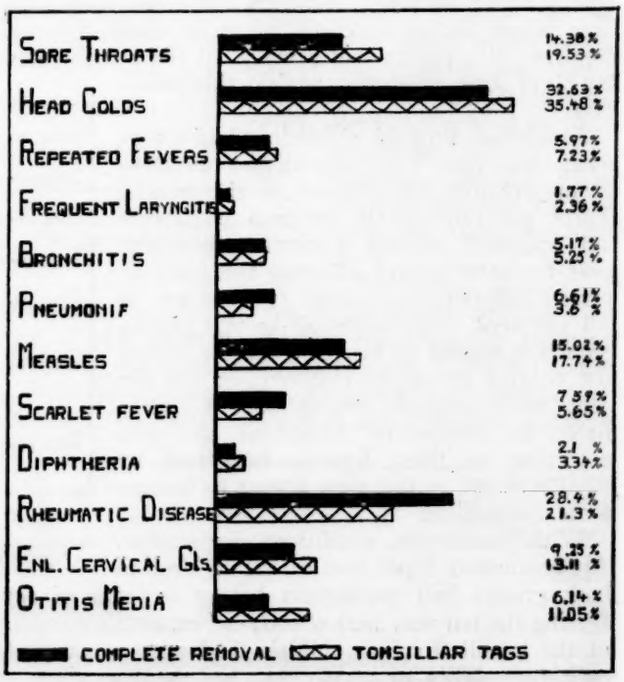


Chart 4.—Effect of incomplete surgical removal of tonsils on incidence of infections and complaints in 1,000 children, in 619 of whom removal was complete and in 381 of whom tonsillar tags remained.

child. The hazard of a tonsil operation, though slight when careful preoperative and surgical technic is employed, must be realized. Against the surgical hazards are placed the benefits that accrue from the operation.

One can honestly deduce that the occurrence of frequent sore throat is beneficially influenced by tonsillectomy. Sore throats may be regarded as hazards to the child, since frequent sore throats are followed occasionally by arthritis, nephritis and heart disease. In other studies of tonsillectomized children it has been found that rheumatic fever, rheumatic endocarditis and nephritis occur less commonly in this group than in groups composed of the same number of children of similar age whose tonsils have not been removed. Unfortunately, the difference is not great, but nevertheless it is a constant one. One can conclude that removal of the tonsils is justified and desirable to combat this complaint, not only to reduce the incidence of sore throats but to reduce somewhat the chronic

degenerative diseases known to exist more commonly in children whose tonsils have not been removed. Such complaints as frequent head colds, unexplained attacks of fever, recurrent hoarseness, frequent nosebleeds and headaches—all of which have served as indication for tonsillectomy—over a ten year period seem to be hardly influenced by removal of the tonsils. They occurred no more often in children whose tonsils were not removed. The hazard of tonsillectomy in view of these end-results hardly seems justified. The common complaints of discharging ears and swollen glands in children has served as an indication for tonsillectomy in many children. Unfortunately, when similar groups are followed through childhood, removal of tonsils and adenoids has not given children the desired protection against infections of the ear. There is abundant evidence to show, however, that recurrent attacks are lessened in tonsillectomized children, even though first attacks may come after the tonsils are removed. Infections in the ear are more common in children subject to frequent head colds. These have not been influenced greatly by removal of tonsils and adenoids over a ten year period, but decidedly during the early school years. During late school years ear infections were less common. It seems that removal of adenoids in early years offers more protection against infections of the ear than removal of the tonsils in later years. The removal of tonsils positively influences the incidence of cervical adenitis. Children subject to gland infections over a ten year period can expect definite benefit from tonsillectomy, which justifies the hazard of operation.

The common infectious diseases of children are not escaped in tonsillectomized children. Scarlet fever and diphtheria over a ten year period are less likely to occur in the child who has been operated on. One must conclude that attacks of bronchitis and pneumonia are hazards of children not lessened by removal of tonsils. In fact, over a ten year period they seem to be increased.

As mentioned before, the incidence of the first attack of rheumatic fever was smaller in the tonsillectomized children. This relationship has held in a survey of all the school children of Rochester, numbering about 50,000. Less rheumatic heart disease has been noted in the group that were operated on. Here also the difference is not great, but constant. No benefit in the prevention of recurrent attacks of rheumatic fever or chorea has been found in the tonsillectomized group. Whatever value the operation may have, it must be noticed in reducing first attacks of rheumatism.

CONCLUSIONS

Considering all these data from a ten year follow-up study of tonsillectomized children, one can conclude that:

1. The real value of the removal of tonsils and adenoids cannot be definitely established in a few years. Apparent benefits during the first few postoperative years are not so evident over a ten year period.
2. Outstanding benefits are apparent in influencing the incidence of sore throats over a ten year period.
3. Substantial benefits are apparent in rendering children less susceptible to scarlet fever and diphtheria.
4. Acute head colds and otitis media, though definitely lessened over a three year period, are not essentially influenced over a ten year follow-up period.
5. Cervical adenitis is decidedly reduced in tonsillectomized children over a ten year period.
6. The respiratory infections, such as laryngitis, bronchitis and pneumonia, not only are not benefited but actually occur more frequently in tonsillectomized children.
7. First attacks of rheumatic manifestations occur from 30 to 50 per cent less often in tonsillectomized children. The greatest reduction occurs in children tonsillectomized early. Recurrent attacks are not benefitted at all.
8. Incomplete tonsillectomies do not offer the same protection against the usual throat complaints and infections as complete removal of tonsils.
9. The hazards of tonsillectomy must be considered in evaluating the end-results. Considering this hazard, the late results seen in 2,200 children ten years after operation are evident only in the reduction of sore throat, cervical adenitis, otitis media, scarlet fever, diphtheria and rheumatic fever and heart disease.

16 North Goodman Street.

ABSTRACT OF DISCUSSION

DR. JOHN MORSE, Boston: I have read many papers on the removal of tonsils and adenoids. I have seen in the course of my practice many children the removal of whose tonsils and adenoids I have advised. I have seen many that have had them removed. I have seen much heart disease in children both with and without tonsils. I am sure that the removal of adenoids frequently has a beneficial effect on the general condition. I think that the removal of the tonsils sometimes has a beneficial effect on the general condition. I haven't the slightest idea whether or not the removal of tonsils has any effect on the incidence of colds and sore throats or the incidence of heart disease, or whether heart disease gets better or worse after their removal.

DR. J. J. SHEA, Memphis, Tenn.: Five years ago, Dr. E. C. Mitchell and I began the study of why there was more sinus disease among children who had suffered the loss of their tonsils and adenoids than among children who had retained their tonsils. Our opinion is that the tonsils and the adenoids are selectors of the bacteria of the environment and serve as a portal of entrance for sufficient bacteria to maintain immunity. When the tonsils and the adenoids have been removed, this burden falls on the paranasal sinuses and the sinuses frequently succumb during their attempt to carry on this physiologic process. We have seen in children who have had their tonsils and adenoids removed the same focal infectious diseases as are attributed to diseased tonsils and adenoids. In the end it will still be necessary to remove children's tonsils and adenoids, but it should be remembered that the child who is operated on needs immunization against the infections of his environment. Through the use of vaccines, cod liver oil and sun therapy, whether actual or acquired, the child's immunity against infection should be kept up and then the children with their tonsils and adenoids removed will give a better picture than those who have been allowed to continue with an infected organ.

DR. J. V. GREENBAUM, Cincinnati: It is rather difficult to compare the statistics of a few hundred cases in Cincinnati with these thousands, but I would like to say that we in Cincinnati have found in a miniature way from several surveys exactly what Dr. Kaiser has found in his large group. Heart disease, rheumatic infections and recurrences of rheumatic infections have been noted as frequently in the tonsillectomized children as in the group of children that had not been operated on. We did, however, find that scarlet fever was somewhat less frequent and certainly less severe in the tonsillectomized group. Along with the idea expressed in regard to the function of the tonsil, I distinctly recall some work done by an Englishman who put dyes in carious teeth and traced the passage of the dyes to the pharnyx. It seemed that these dyes congregated in the crypts of the tonsils. When the tonsils were removed in children with carious teeth, these dyes were then deposited in the pharyngeal tissues. Therefore I want to stress again the importance of caring for a diseased mouth before the removal of the

tonsils, and also the importance of taking care of the teeth even after the tonsils are taken out. There is unquestionably a swing against the promiscuous removal of tonsils, and I am sure that Dr. Kaiser's work, reported from year to year, is the leading factor in this tremendous revulsion of feeling from too frequent taking out of the tonsils to a proper aspect of the subject. In Cincinnati and vicinity there used to be large groups of children on whom tonsillectomies had been ordered based on the fact that visiting nurses had advised their removal. More care is now being exercised in determining which children should have these operations.

DR. W. H. ROBEY, Boston: In the Boston City Hospital for several years this problem has been attacked from a little different angle. The attempt has been made merely to stop acute rheumatic fever when all other medical measures have failed, such as rest and diet, and some brilliant results have resulted. In cases that were going on week in and week out with constant danger to the heart, in addition to a considerable economic loss both to the patient and to the hospital, the fever has been disregarded, no matter how high it was, no matter how red, tender and swollen the joints were, and the tonsils have been taken out, the disease sometimes being stopped in two or three days when all other measures had failed. Of course there is a risk, and nose and throat men hesitate about operating, particularly at this stage, but there have been no bad results. As a matter of fact, within the last year I have seen two deaths from acute tonsillitis in patients who were not operated on. I believe that there has been too much delay and fear in taking out tonsils. I regard tonsillectomy as a major operation, and people who take out tonsils should be thoroughly trained in the procedure. One reason for failure, in my opinion, to get good results from tonsillectomy is that the tonsils are allowed to remain so long that they set up a tremendous amount of scar tissue and therefore the mucous membrane of the throat can never be returned to a normal condition; furthermore, the infected tonsils set up foci of infection in other parts of the body, particularly the synovial membranes, and, lastly, certain cases of incomplete tonsillectomy leave a sufficient number of crypts which are just as dangerous to the patient as infected tonsils. This winter the brother of a young surgeon in Boston had a recurrent acute rheumatism with intense pain. Nothing did him any good. Three nose and throat men saw him in consultation with his physician and finally one, under protest, decided to operate. In four days the man was over a rheumatism that had lasted ten weeks. I saw the brother recently and he said that the patient is perfectly well without any recurrence of rheumatic fever.

DR. HENRY F. HELMHOLZ, Rochester, Minn.: Dr. Kaiser's differentiation with regard to sore throats, which are usually an acute follicular tonsillitis, and colds is an important distinction and one that should be of great significance in determining whether to advise or not advise the removal of tonsils. Sore throat is usually an acute follicular tonsillitis which is a streptococcic infection in the majority of instances. Colds are infections of the entire nasopharyngeal membrane, and the removal of the tonsils in this type of infection is rarely of any advantage. I believe it is the removal of the tonsils in this type of case that results in an increase in the incidence of sinus infection, as has been brought out, as well as an increase in the number of cases of chronic bronchitis. It is not the removal of the tonsil in patients with streptococcic tonsillitis that gives rise to increased sinusitis and chronic bronchitis.

DR. RUFUS JACKSON, Baton Rouge, La.: There has not been enough responsibility assumed by the pediatrician in determining the desirability or the nondesirability of operation in their cases. When I first began the practice of ear, nose and throat work I was somewhat resentful toward pediatricians because they did not defer to my assumed intelligence on this matter of tonsils and adenoids. The older I grew the happier I was that those men who sent me most of their tonsil and adenoid cases are the men who are best convinced themselves and go most deeply into the question of whether they should be removed before they send them to me. Another point is that not enough differentiation is made in the matter of a complete removal of adenoids and tonsils.

DR. ALBERT D. KAISER, Rochester, N. Y.: In reply to a question as to whether the controls mentioned really were controls, and whether the children who were operated on weren't children who had worse conditions, it is well known that children who have recurrent infections are likely to reach the operating table. A mother of such a child is finally persuaded to have the operation, so I believe the controls perhaps are not quite as severe as the children who were subjected to operation. In reply to Dr. Greenbaum's question, I think they get the same dental care that the younger children get. Of course, if any neglect was shown in would reach both groups. I quite agree with Dr. Robey that there is a tendency to operate too late on children who have the indications for operation. Dr. Helmholz has expressed much better than I could exactly what I have in mind, that sore throats and streptococcic infections are not head colds, and I am convinced that operation has a beneficial effect in the type of child subject to sore throats. The patients who are operated on early, before rheumatic manifestations are established, get a real help in early removal. The children were separated into age groups. The greatest benefit came in children between 3 and 7 years of age. This is based on a percentage basis. After 7 years of age tonsil removal had little effect on the recurrence of infections. I agree with Dr. Jackson that tonsillectomy cannot be decided by a mere glance at the throat. The nose and throat man with a casual glance can give an opinion but the physician who cares for the child is the best one to decide and I think his decision should be taken. I did not mean to give the impression that tonsillectomy has no place, but I am conscious that there is a revulsion against tonsillectomy, and it would be a sad affair if this medical procedure, which has done so much for certain types of children, should be abandoned. On the other hand, when a procedure reaches the point at which 50 per cent of all the community are subjected to it, many for insufficient reasons—when a child can't get work on account of the fact that he has tonsils in his throat, I think that the type of infection which can really be benefited by tonsil removal should be laid down.

BISMUTH SUBNITRATE IN THE TREATMENT OF ARTERIAL HYPERTENSION *

EDWARD J. STIEGLITZ, M.D.
CHICAGO

Curative therapy must be based on etiology. The etiology of arterial hypertension is complex; anything that irritates the arteriolar musculature or stimulates the sympathetic pressor fibers may represent the original cause of hypertensive vascular disease. These irritants are many;[1] endocrine disturbances, dietary irritants, infections, intoxications with metals or chemical irritants, anemia and predisposition to early fatigue of the vascular structures represent some of the known factors. These factors may be spoken of as "initiating factors." In addition, the arteriolar disease of hypertension tends to perpetuate itself even if the irritative factors are no longer operative.[2] The pathogenesis of hypertension may be best visualized from the diagram. The perpetuating factor is the vicious circle of vascular spasticity causing muscular fatigue, the fatigue leading to increasing arteriolar irritability, and in turn more spasticity and fatigue. Fatigue is amenable to rest; exhaustion, muscular degeneration and fibrosis are irreparable.[1] Clinical experience indicates a

* From the Department of Medicine, Rush Medical College and the Medical Service of the Chicago Lying-In Hospital.
* Read before the Section on Pharmacology and Therapeutics at the Eighty-First Annual Session of the American Medical Association, Detroit, June 25, 1930.

1. Stieglitz, E. J.: Arterial Hypertension, New York, Paul B. Hoeber, 1930.
2. Blackford, J. M.; Bowers, J. M., and Baker, J. W.: Follow-Up Study of Hypertension, J. A. M. A. **94**: 328 (Feb. 1) 1930. Munson, S. E.: Illinois M. J. **56**: 397 (Dec.) 1929.

steady progression of hypertension with no evidence of spontaneous remission.[3]

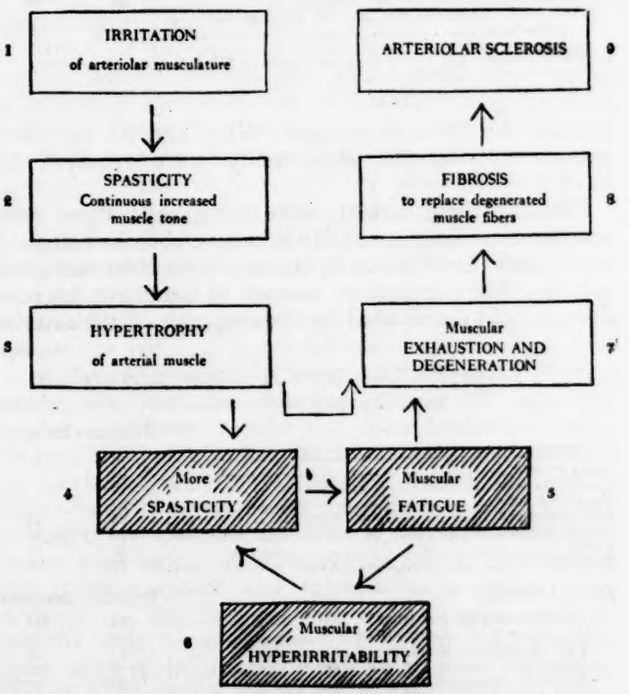
Logical therapy therefore demands that both the initiative and the perpetuative etiologic factors receive attention; there must be attack from two directions. Eradication and elimination of the original etiologic factors so far as it is possible to alter them is essential. This involves attention to foci of infection, correction of unwise dietary habits, therapy directed against thyrotoxicosis, and elimination of exogenous sources of vascular irritation. It is not my purpose to consider this aspect in detail; individualization of therapy to suit each specific instance is imperative.[4] The second and equally essential point of attack is the vicious circle of vascular fatigue which perpetuates hypertension irrespective of the nature or presence of the original initiating factors. As this circle is maintained through continuous arteriolar spasticity, interruption and relaxation of such spasticity should logically break the vicious cycle. Such relaxation must persist for some time, however, before the element of fatigue is removed. To cause purely transient vascular relaxation is symptomatic therapy and not curative, but if the relaxation is sufficiently prolonged that vascular *rest* permits of the elimination of muscular *fatigue*, the therapeutic results are permanent and essentially curative.

It has long been known that nitrites (NO_2^-) cause vascular relaxation. The soluble nitrites, amyl nitrite, glyceryl trinitrate, sodium nitrite and erythrol tetranitrate, cause violent and transient arterial relaxation. But the very violence and fleeting character of this relaxation make these substances unfit for therapeutic administration in arterial hypertension except in acute vascular emergencies as in angina pectoris or cerebral arterial spasm. A slowly soluble, slowly absorbed nitrite, liberating the nitrite ion (NO_2^-) into the blood stream continuously in small amounts, is therefore highly desirable. Such a substance is bismuth subnitrate. I have used this sparingly soluble nitrate in the therapy of hypertension for the last five years with excellent therapeutic results.[5] Hypotension may occur in normal individuals from excessive administration of bismuth subnitrate for diarrhea.[6]

The course of events following the oral administration of bismuth subnitrate may be briefly outlined as follows: In the bowel the bismuth subnitrate is slowly decomposed, liberating nitrate ions (NO_3^-). The nitrate (NO_3^-) is reduced by *Bacillus coli* to nitrous acid.[7] Thus minute quantities of nitrite ions are continuously absorbed, as the low solubility of the original salt maintains a persistent repository. The process is equivalent to the oral administration of minute doses of glyceryl trinitrate at ten or fifteen minute intervals throughout the day and night. Such medication is obviously impossible. During and following the administration of 10 grains (0.65 Gm.) of bismuth subnitrate thrice daily small amounts of nitrite ions are detectable in the urine.[8] Gradual, gentle, persistent vascular relaxation and reduction of the arterial tension occurs.[9] Nitrate ions also have the property of being diuretic and causing a profuse chloride diuresis with reduction of the tissue content of chloride.[10] A small but definite reduction of the chloride content of the blood occurs during therapy with bismuth subnitrate.[11] It is questionable, however, whether the blood chloride content affects the arterial tension to any notable degree.[12] No evidence of bismuth absorption has been found in these cases; if any occurs, it must be slight.[13] Bismuth is also mildly diuretic.[14] No manifestations of intoxication have been observed, although carefully sought for. I believe, with the small doses of this sparingly soluble salt, no intoxication is to be feared.

THERAPEUTIC RESULTS

The therapeutic results obtained by such a method of management in arterial hypertension are unusually good (tables 1, 2 and 3). In the 200 consecutive unselected cases of arterial tension observed in private practice and in the Renal and Vascular Disease Clinic of the Central Free Dispensary, Rush Medical College



Probable pathogenesis of hypertensive arterial disease. The shaded portion of the diagram represents the vicious circle of fatigue, the "perpetuating factor" in hypertension. Up to the point of muscle degeneration (step 7) the processes are reversible; beyond that point irreparable. After Stieglitz (footnote 1).

(table 1), the average improvement for the whole series was 60 per cent for the systolic hypertension and 83 per cent for the diastolic hypertension. To compare results on the basis of millimeters' fall in tension is misleading; it is far more accurate to base comparisons on the percentage approach toward the maximum normal for the age. In these series the maximum normal

3. Munson (footnote 2).
4. Mosenthal, H. O.: Illinois M. J. **56**: 406 (Dec.) 1929. Post, W. E., and Stieglitz, E. J.: Am. J. M. Sc. **171**: 648 (May) 1926.
5. Stieglitz, E. J.: J. Pharmacol. & Exper. Therap. **32**: 23 (Nov.) 1927; **35**: 407 (Dec.) 1928.
6. Stieglitz (footnote 1). Frick, Anders: Medical Treatment of Peptic Ulcers Without Alkalis, J. A. M. A. **82**: 595 (Feb. 23) 1924.
7. Salin, E. B.: Acta med. Scandinav. **63**: 369, 1926.
8. Stieglitz (footnote 5, first reference). Hyman, A., and Mann, L. T.: J. Urol. **22**: 521 (Nov.) 1929.
9. Stieglitz (footnotes 1 and 5).
10. Cushney, A. R.: The Secretion of Urine, ed. 2, New York, Longmans, Green & Co., 1926. Haake and Spiro: Beitr. z. chem. Physiol. u. Path. **2**: 149, 1902. Loeuri: Arch. f. exper. Path. u. Pharmakol. **48**: 419, 1902. Sollmann, T. H.: Am. J. Physiol. **9**: 425, 1933. Langlois and Rochet: J. de physiol. et de path. gén. **2**: 742, 1900. Stieglitz, E. J.: Hypertension in Pregnancy, Arch. Int. Med. **39**: 465 (April) 1927. Jacobs, M. F., and Keith, N. M.: M. Clin. North America **10**: 605 (Nov.) 1926. Stieglitz, E. J.: Alkalis and Renal Injury, Arch. Int. Med. **41**: 10 (Jan.) 1928.
11. Stieglitz (footnote 5, second reference).
12. Stieglitz (footnote 5, second reference). Berger, S. S., and Fineberg, M. H.: The Effects of Sodium Chloride on Hypertension, Arch. Int. Med. **44**: 531 (Oct.) 1929. Berghoff, R. S., and Guaci, A. S.: Illinois M. J. **56**: 395 (Dec.) 1929. Allen, F. M., and Sherrill, J. W.: J. Metab. Research **2**: 429 (Oct.) 1922. Mosenthal, H. O., and Short, J. J.: Am. J. M. Sc. **173**: 844 (June) 1927.
13. Boyd, M. L.: Bismuth is Absorbed, J. A. M. A. **93**: 269 (July 27) 1929.
14. Starnotti, C.: Riv. di clin. med. **29**: 938 (Oct. 30) 1928.

figures for different ages were obtained from the rating manuals of prominent insurance companies.

As is seen in table 1, the average blood pressure at the start of treatment of 191 systolic and 114 diastolic was 54 systolic and 24 diastolic above the maximum

TABLE 1.—*Results of Treatment*

	Number	Per Cent
Number of cases	200	
Average age	49.7	
Maximum age	77	
Minimum age	15	
Patients more than 45 years of age	138	69
Patients less than 45 years of age	62	31
Males	63	32
Females	137	68
Duration of observation: Average	6.3 months	
Maximum	48 months	
Minimum	2 months	
Arterial tension	**Systolic**	**Diastolic**
At the onset of treatment	191	114
At the end of observation	159	94
Fall in arterial tension	32	20
Maximum normal for the average age	137	90
Per cent approach to normal on therapy (improvement)	60%	83%

Diastolic tension fell to 100 mm. or below in 155 cases, or 77 per cent

normal for the average age. Sixty and 83 per cent, respectively, of this abnormality were removed by therapy.

Dividing these patients into two groups, those with and those without arteriolar sclerosis, reveals (tables 2 and 3) how essential *early* therapy is in obtaining good results. The presence or absence of extensive sclerotic changes was determined by the response of the arterial

TABLE 2.—*Cases With Arteriolar Sclerosis*

	Number	Per Cent
Number of cases	78	
Average age	53	
Maximum age	76	
Minimum age	27	
Patients more than 45 years of age	64	82
Patients less than 45 years of age	14	18
Males	21	27
Females	57	73
Arterial tension	**Systolic**	**Diastolic**
At the onset of treatment	203	119
At the end of observation	178	106
Fall in arterial tension	25	13
Maximum normal for the average age	139	91
Per cent approach to normal on therapy	39%	46%

TABLE 3.—*Cases Without Arteriolar Sclerosis*

	Number	Per Cent
Number of cases	122	61
Average age	47	
Maximum age	77	
Minimum age	15	
Patients more than 45 years of age	74	61
Patients less than 45 years of age	48	39
Males	42	34
Females	80	66
Arterial tension	**Systolic**	**Diastolic**
At the onset of treatment	183	110
At the end of observation	147	88
Fall in arterial tension	36	22
Maximum normal for the average age	134	89
Per cent approach to normal on therapy	73%	105%

tension to the inhalation of amyl nitrite,[15] the presence or absence of retinal vascular changes and the history of the duration of the disease, but not the age of the patient. Neither the severity of the hypertension per se nor the age of the patient is a very significant factor.

15. Stieglitz, E. J.: Arterial Hypertension, Arch. Int. Med. **46**: 227 (Aug.) 1930.

The prognosis in arterial hypertension depends largely on the extent of irreparable, permanent vascular and cardiac injury.[15] In the group of 122 cases without extensive arteriolar sclerosis it is notable that the average reduction of the significant[1] diastolic tension was to within the normal range.

It may be remarked that the average age is higher in the group of patients with extensive sclerotic changes and that this factor might influence the therapeutic

TABLE 4.—*Results in Relation to Age*

Ages	20-29		30-39		40-49		50-59		60-77	
Number of cases	23		27		38		61		51	
	S*	D*	S	D	S	D	S	D	S	D
Arterial tension at onset	171	110	182	118	190	114	194	114	201	112
Arterial tension at close	141	87	148	94	158	95	163	97	171	93
Fall	30	23	34	24	32	19	31	17	30	19
Maximum normal†	130	85	132	88	137	90	141	92	145	97
Approach to normal per cent	73	92	68	80	60	79	59	77	54	126

* S = systolic; D = diastolic.
† From insurance rating manuals.

result. Such an interpretation is not justified, however, after consideration of the data in table 4, in which the therapeutic results of various age groups are compared.

The excellent therapeutic results in the older patients may perhaps be explained by consideration of the diagram of the pathogenesis of arterial hypertension; older muscles do not respond with such extensive hypertrophy as younger muscles.[16] In this respect arterial hypertension resembles diabetes mellitus, with which it is not frequently associated in older persons;[17] the later the onset of the disease, the less severe its average course.

In hypertension in pregnancy, if the intoxication causing the hypertension is not too profound,[18] similar response occurs to the administration of bismuth subnitrate (table 5). The last antepartum blood pressure is used as a criterion of improvement because of the usual marked vasorelaxation which follows delivery or

TABLE 5.—*Hypertension In Pregnancy*

	Number	Per Cent
Number of cases	120	
Average age	27.7	
Average parity	2.8	
Primiparas	57	47.5
Complications: Maternal deaths	0	
Fetal deaths	6	5
Severe nephritis	20	16.5
Acute infections	6	5
Syphilis	3	2.5
Diastolic tension fell adequately in	82	61
Diastolic tension failed to fall in	38	39
Of these, also nephritic	19	50
Arterial tension	**Systolic**	**Diastolic**
At the onset of therapy	158	99
Last antepartum tension	143	90
Average reduction	15	9

the removal of an important initiating source of vascular injury.[5] The well known tendency toward continuous elevation of the arterial tension as pregnancy progresses must be taken into consideration; arrest of such progress upward is an accomplishment. In these 120 pregnant women with arterial hypertension, seen in the Medical Service of the Chicago Lying-In Hospital, many had associated complications, especially renal

16. Mumford, P. B.: Brit. M. J. **1**: 324 (Feb. 19) 1927. Mines, G. R.: J. Physiol. **46**: 188, 1913. Russell, W.: Arterial Hypertension, Sclerosis and Blood Pressure, 1908, p. 87. Savill, T.: Tr. Brit. Path. Soc. **55**: 375, 1904. Dickinson and Rolleston: Lancet **2**: 137, 1895.
17. Joslin, E. P.: The Diabetic Problem of Today, J. A. M. A. **83**: 727 (Sept. 6) 1924. Adams, S. F.: Am. J. M. Sc. **177**: 195 (Feb.) 1929. Stieglitz, E. J.: Illinois M. J. **50**: 234 (Sept.) 1926.
18. Stieglitz (footnote 1); Nephritis in Pregnancy, to be published.

injury. The coincidence of extensive nephritis, as is to be expected, was unfavorable to good therapeutic results.

COMMENT

In this series of 200 cases, unselected, of arterial hypertension treated with bismuth subnitrate as a vascular sedative, with the objective of causing slow, gradual but persistent arteriolar relaxation and rest, 77 per cent of the patients responded with a fall in the diastolic tension to 100 mm. or below. This method of therapy is of especial value in those instances of arterial disease in which extensive sclerotic changes have not as yet occurred.[15] Arteriolar spasticity is relaxable, arteriolar muscular fatigue is amenable to rest and muscular hypertrophy is reversible, whereas muscular exhaustion, degeneration and replacement with fibrous connective tissue is irrevocable. No therapy can be expected to accomplish more than arrest of progression for the sclerotic cases. The tabulations reveal the extent of the improvement observed. They do not show, however, the permanence of these results. In the dispensary clientele a few, and in private practice more of these patients have been observed over a period of four years; the arterial tension tends to remain down *after* withdrawal of all medication if the period of induced vascular rest is sufficiently prolonged (two to five months) to permit of rehabilitation of the arteriolar walls and to break the habit of spasticity.[19] In several instances in which the arterial tension was known to exceed 190 systolic and 115 diastolic for three years or more prior to bismuth subnitrate therapy, the tension has remained below 135 systolic and 85 diastolic for three to four years after cessation of all medication, in patients ranging from 37 to 70 years of age.[20] Space does not permit more detailed description of individual cases.

The limitations of bismuth subnitrate in the therapy of arterial hypertension are essentially self-evident.[21] It is unjustified to anticipate good results from such therapy in situations in which actively operating etiologic factors are neglected as, for example, oral sepsis or grossly injurious dietary habits. Extensive arteriolar sclerosis precludes any extensive improvement. Extensive impairment of the renal functional efficiency or renal reserve [1] likewise inhibits good results. The drug is, however, of great assistance in reducing the cardiac burden [22] in arterial hypertension.

I do not know of any contraindications. The very gradual reduction in the arterial tension avoids difficulties arising from too extensive or abrupt a fall and from "relative hypotension." [1] In the dosage employed (capsules of 10 grains, three times a day) constipation is very rarely induced. The essential effect of the bismuth subnitrate is the production of vascular relaxation and rest. This rest, in order to accomplish anything permanently, must be persisted in for some time. The best results are obtained by the very gradual reduction in the dosage of the drug so that medication is not completely withdrawn before three or four months. By analogy this may be compared to the gradual withdrawal of crutches.

Comparison of the present series of observations with others to contrast the value of various other methods of medication is difficult.[23] To discuss all the suggested methods of therapy is impossible; there is hardly a drug that has not been tried. A few most recent suggestions should be mentioned. The value of repeated injections of an hepatic extract has been emphasized,[24] but it must be pointed out that the enthusiasm for such a method of attack has largely subsided. The effects are transient, the method quite costly and uncomfortable. The majority of patients with hypertensive arterial disease feel far too well and energetic to subject themselves to biweekly or triweekly hypodermic medication. It is notable that no reports of results obtained over a period of years have appeared. Potassium thiocyanate has also been used in the treatment of hypertension and apparently with encouraging results.[25] It is, however, not entirely safe and one hears of occasional distressingly severe intoxications.[26] Newest of the drugs advocated for hypertensive arterial disease is cucurbocitrin,[27] which is said to cause sustained vasodilatation on oral administration. Cucurbocitrin, however, is not accepted by the Council on Pharmacy and Chemistry.[28]

Attack of the cycle of emotional tension causing a rise in arterial tension and the arterial hypertension aggravating the emotional irritability [29] may be made either by vascular sedation, as with bismuth subnitrate, or with central nervous system sedation, as with bromides,[30] chloral hydrate [31] or phenobarbital.[32] A series of eighty-seven cases treated with bromides [33] and studied in a similar fashion revealed a 58 per cent reduction of the systolic tension and a 76 per cent reduction of the diastolic tension. Clinical experience has indicated that the therapeutic results with bismuth subnitrate are not only better but also more lasting.[1]

In the management of arterial hypertension in pregnancy, the fact that the hypertension is merely an expression of the vascular and tissue intoxication must be kept in mind. So long as this intoxication continues or increases, the arterial tension rises. Our results have shown that, even with this tendency to increasing elevation of the arterial tension, bismuth subnitrate causes a moderate fall. Because of this fall the arterial hypertonia becomes less valuable as a guide to the severity of the intoxication, and a false sense of security may be misleading. Constant vigilance and alert comprehension of the relationship of the arterial tension to tissue intoxication [34] in pregnancy are essential. Bismuth subnitrate is, obviously, inadequate for the treatment of the profound intoxication of eclampsia.

SUMMARY

1. Curative therapy must be based on etiology.

2. The etiology of arterial hypertension involves two groups of factors: the initiating sources of vascular

19. Stieglitz (footnote 1). Mumford (footnote 16).
20. Stieglitz (footnotes 1 and 15).
21. Stieglitz (footnote 5, first reference).
22. Fahr, G.: Am. J. M. Sc. **175**: 453 (April) 1928.
23. Council on Pharmacy and Chemistry: Therapeutic Claims for Theobromine and Theophylline Preparations, J. A. M. A. **94**: 1306 (April 26) 1930.
24. Major, R. H.: The Action of Hepatic Extract in Hypertension, J. A. M. A. **87**: 311 (Aug. 7) 1926. MacDonald, W. J.: Canad. M. A. J. **15**: 697 (July) 1925. Major, R. H.: J. Kansas M. Soc. **25**: 177 (June) 1925.
25. Gager, L. T.: The Incidence and Management of Hypertension, J. A. M. A. **90**: 82 (Jan. 14) 1928. Nichols, J. B.: Am. J. M. Sc. **170**: 735 (Nov.) 1925. Westphal, K.: Deutsches Arch. f. klin. Med. **152**: 331, 1926.
26. Logefeil, R. C.: Minnesota Med. **12**: 151 (March) 1929. Weis, C. R., and Ruedermann, Rudolph: Exfoliate Dermatitis from Potassium Sulphocyanate Therapy, J. A. M. A. **93**: 988 (Sept. 28) 1929. Ayman, David: Exfoliate Dermatitis from Potassium Thiocyanate, Correspondence, J. A. M. A. **93** 1671 (Nov. 23) 1929.
27. Barksdale, I. S.: Am. J. M. Sc. **171**: 111, 1926. Althausen, T. L., and Kerr, W. J.: Ibid. **178**: 470 (Oct.) 1929.
28. Citrin not Acceptable for N. N. R., J. A. M. A. **94**: 1067 (April 5) 1930.
29. Stieglitz, E. J.: Am. J. M. Sc. **179**: 775 (June) 1930.
30. Post and Stieglitz (footnote 4). Wile, U. J.: Bromide Intoxication, J. A. M. A. **89**: 340 (July 30) 1927.
31. Mosenthal, H. O.: M. Clin. North America **5**: 1139 (Jan.) 1922.
32. Gruber, C. M.; Shakelford, H. H., and Ecklund, A. M.: The Effect of Phenobarbital (Luminal) on Blood Pressure in Hypertension, Arch. Int. Med. **36**: 366 (Sept.) 1925.
33. Post and Stieglitz (footnote 4).
34. Stieglitz (footnote 18, second reference).

irritation and the perpetuating and exacerbating influence of vascular fatigue induced by the hypertension itself.

3. The latter vicious circle of vascular fatigue, arteriolar hyperirritability and spasticity may be broken by persistent, prolonged and mild vascular sedation.

4. Vascular sedation is accomplished by the oral administration of small, repeated doses of bismuth subnitrate.

5. Bismuth subnitrate, being sparingly soluble, liberates small amounts of nitrate ions continuously, which, on conversion into nitrous acid by *Bacillus coli*, lead to gradual vasorelaxation.

6. The therapeutic results obtained by applying these principles to the therapy of arterial hypertension in 200 unselected cases of hypertensive arterial disease and 120 cases of hypertension in pregnancy are surprisingly gratifying.

7. The results of therapy are dependent on early diagnosis of arterial disease and prompt institution of therapy. Spasticity, medial muscular hypertrophy and fatigue are amenable to therapy; exhaustion and fibrosis of vascular walls are irrevocable.

8. It is hoped that the interest of a larger group of workers in arterial hypertension may be stimulated so that this method and these ideas may be evaluated more completely.

310 South Michigan Avenue.

THE RATIONAL TREATMENT OF ARTERIAL HYPERTENSION *

SOMA WEISS, M.D.
AND
LAURENCE B. ELLIS, M.D.
BOSTON

Functional and structural abnormalities of the peripheral vascular system, rather than the degree of elevation of the blood pressure, are the significant aspects of "persistent arterial hypertension." Because of the ease with which the systolic and diastolic arterial pressures can be determined, and because of the lack of clinical or laboratory methods for the evaluation and measurement of the peripheral vascular resistance, the height of the blood pressure has come to be considered the index of this resistance. The terms elevated blood pressure and increased vascular resistance, therefore, are frequently used interchangeably, even though a quantitative relationship between these two factors of the circulation does not always exist. Clinical terms such as hyperpiesia (Clifford Allbutt), hypertonia (Pal) and hypertensive cardiovascular disease (Theodore Janeway) define this clinical state of the cardiovascular system more accurately than the generally accepted terms, arterial hypertension and essential hypertension.

The diagnosis of arterial hypertension in borderline cases requires considerable judgment. A diagnosis of arterial hypertension is arbitrarily considered justifiable if an individual under normal daily activity shows a prolonged tendency to a systolic blood pressure of 160 mm. of mercury or over and a diastolic pressure of 90 or 95 mm. or over. Primary (essential) hypertension, it has been estimated,[1] is responsible for about 23 per cent of all deaths in persons 50 years of age and older. Because of the wear and tear exerted on the arterial and arteriolar systems in arterial hypertension, there is hardly a bodily structure or function that may not suffer from the consequences of this condition. Thus, although the etiologic factors producing arterial hypertension are numerous, arterial hypertension in itself is a causative agent of numerous morbid states of the body.

Pressure is one of the biologic stimuli that lead to cell degeneration. The constant physiologic pressure within the ventricles, arteries and arterioles may be one source of natural degenerative process in these tissues. The relative longevity of man, as compared with other mammals of similar size, is one of the factors that make degenerative cardiovascular disease so prominent in man. The degree of vascular degeneration depends, among numerous other causes, on the height and the duration of the pressure in the vessels. Statistical data have established with surprising exactness the prognostic significance of the level of the arterial blood pressure, although frequent and marked exceptions to such statistical conclusions occur in the individual case.

Elevated arterial pressure per se causes relatively slight discomfort in the majority of patients. It is not uncommon for this condition to remain symptomless until the onset of complications, and this has occurred in our experience in 12 per cent of cases in a group of 1,090 patients with uncomplicated arterial hypertension.[2] When symptoms occur they are usually referable to an unstable vasomotor system. Therapy in uncomplicated hypertension, therefore, should aim mainly to prevent impending complications and to relieve symptoms; it should be shaped so far as possible by a knowledge of the etiology and nature of the mechanism involved in the pathologic condition. A therapeutic measure that is useful in one stage of the condition may be contraindicated in another, and one of the most significant results of a proper appreciation of the pathogenesis of this disease is that many therapeutic agents are at once ruled out and thus futile expectations and efforts are prevented.

So many therapeutic claims are made continuously in the medical literature that many physicians have become uncertain as to the best treatment for hypertension. It is our purpose in this communication to establish certain principles, and to describe therapeutic measures in the light of experience gained in studies conducted at the Boston City Hospital during the past three years.

ETIOLOGIC FACTORS

Of the factors responsible for the development of arterial hypertension, constitutional predisposition plays a dominating rôle in a large percentage of patients. The frequent occurence of arterial hypertension in several members of a family illustrates this. The constitutional predisposition not only consists of inherited structural characteristics but also manifests itself in certain functional reactions such as psychic hypersensitivity and excessive mental activity, in the presence of inhibitions and fears, and occasionally in the abnormal functioning of the endocrine glands. Patients with such a constitutional make-up tend to have a close association between the cortical and vegetative functions, which act through the vasomotor center and

* From the Thorndike Memorial Laboratory, Boston City Hospital, and the Department of Medicine, Harvard University Medical School.
* Read before the Section on Pharmacology and Therapeutics at the Eighty-First Annual Session of the American Medical Association, Detroit, June 25, 1930.

1. Fahr, George: Hypertension Heart, Am. J. M. Sc. **175**: 453 (April) 1928.
2. Riseman, J. E. F., and Weiss, Soma: The Symptomatology of Arterial Hypertension, Am. J. M. Sc. **180**: 47 (July) 1930.

the sympathetic vasomotor nerves or through humoral changes, to produce an increased tonic state in the wall of the arteriolar system. Such a congenital constitutional predisposition may be considerably altered in later life by favorable or unfavorable surroundings, thus retarding or accelerating the clinical course of arterial hypertension.

Of the predisposing exogenous factors, conditions leading to mental tenseness, such as worry and fear, and certain substances, such as lead, are significant. Although hardly understood at present, endogenous tissue responses in association with the rheumatic and other infections may play a rôle in the production of hypertension, usually of the malignant type. Chronic infectious processes in the parenchyma and the pelvis of the kidney may also be responsible for arterial hypertension.

Of the endogenous causes, hyperthyroidism is responsible for, or at least associated with, relatively few cases. Hypersuprarenalism may perhaps cause arterial hypertension in rare instances. Obesity and bodily changes associated with the menopause are frequently in close relationship to the development of hypertension. The association of primary nephritis and the toxemias of pregnancy with hypertension are well recognized, though the mechanism of this interrelation is not understood.

The relationship between primary degenerative processes in the minute blood vessels and arterial hypertension, notwithstanding the numerous studies on this subject, is incompletely understood.[3] It is well established that primary arterial hypertension, due to a functional contraction of the arterioles, in many instances leads to secondary arteriosclerosis of the arteries and arterioles. The clinical course of arterial hypertension in some patients suggests, however, that certain senile degenerative processes in the arterioles precede the development of the elevation of the blood pressure. In these patients a constitutional predisposition is not found; they are phlegmatic individuals in whom elevation of blood pressure occurs simultaneously with involutionary changes and clinical evidence of degeneration of the arteries. The significance of primary capillary fibrosis as a cause of arterial hypertension in certain cases is probably explained by the theory of Gull and Sutton.[4]

The possible rôle of numerous other causative factors in hypertension is either minor or not established as yet. All explanations of the origin of arterial hypertension on the basis of circulating toxic material are so far either disproved or not established. In a number of instances the presence of a chemical substance in abnormally high concentration in the blood or tissues is not the cause, as claimed, but rather the effect of arterial hypertension. There are few diseases in which there is but a single causative factor. In hypertension, especially, where numerous etiologic mechanisms may be operative singly or in conjunction, it is futile to look for a single responsible substance. Similarly, proof is required in support of the theory that certain local disturbances of the circulation of the kidneys result in a compensatory generalized contraction of the arterioles of the body in order to reestablish normal circulatory and secretory conditions within the kidneys.

3. Weiss, Soma: The Development of the Clinical Concept of Arterial Hypertension, New England J. Med. **202**: 891 (May 8) 1930.

4. Gull, W., and Sutton, H.: On the Pathology of the Morbid State Commonly Called Chronic Bright's Disease (Arteriocapillary Fibrosis), Med.-Chir. Tr. **37**: 272, 1872. Riseman, J. E. F., and Weiss, Soma: The Age and Sex Incidence of Arterial Hypertension, Am. Heart J. **5**: 172 (Dec.) 1929.

THE MECHANISM OF THE CIRCULATION IN HYPERTENSION

Next to a consideration of the etiology of arterial hypertension, an understanding of the mechanism of certain bodily functions, and primarily of the circulation, has the most important relation to treatment; for often, although the primary cause of the disease cannot be influenced, the faulty bodily state can be repaired. It has been claimed that decreased elasticity of the larger arteries, faulty respiratory function, decreased amount of blood in the lungs, increased circulating blood volume, increased cardiac output or increased viscosity of the blood may be responsible, singly or in combination, for the development of arterial hypertension. Part of the confusion in the literature undoubtedly has resulted from statements made on a basis of clinical assumptions and not of quantitative observations. In other instances, conflict in the results of observations has occurred because the studies were made at different clinical stages of arterial hypertension and the clinical condition of the patients was not closely correlated with the results obtained.

We have recently completed a study of a group of patients with arterial hypertension, in whom the respiratory and cardiac volume outputs per minute, the velocity of blood flow, the circulating blood volume and the arterial, arteriolar, capillary and venous pressures were simultaneously estimated.[5] In the absence of cardiac failure all of these measurements fell within normal limits except the arterial and arteriolar pressures, which were markedly increased. In a group of patients showing definite cardiac failure,[6] the changes in velocity of blood flow, vital capacity and venous pressure were similar to those in other types of circulatory failure.

A study of the foregoing aspects of the circulation demonstrates clearly that the specific abnormal characteristic of the circulation in arterial hypertension is the increased resistance offered by the arteriolar system. This resistance, at least in the early stages of the disease and in the majority of cases, is partly functional in nature.[7] An increased pressure is established in the arterial and arteriolar portion of the vascular system in order to force the blood through the abnormally resistant arterioles and to maintain a capillary circulation which is adequate for normal tissue nutrition. The increased arterial blood pressure is, therefore, a compensatory change which is optimal for the existing vascular resistance, unless cardiac failure has set in, in which case it is usually inadequate.

SPECIFIC DRUG THERAPY

This brief consideration of the etiology and pathogenesis of arterial hypertension indicates the complexity of the problem of therapy. It suggests the numerous and often deep-rooted differences that exist between experimentally induced high blood pressure in animals and arterial hypertension in man.

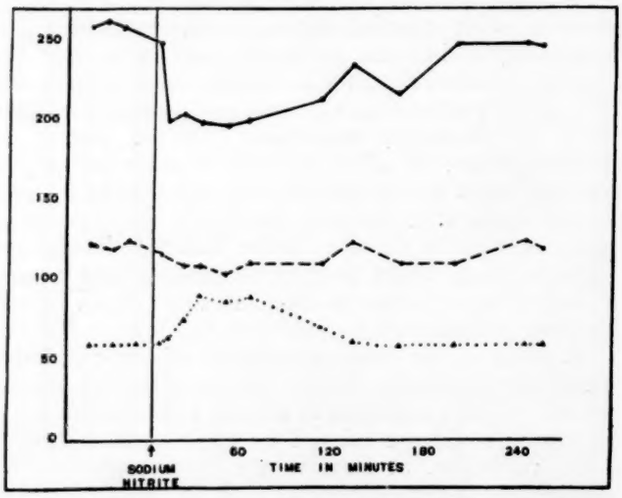
5. Weiss, Soma; and Ellis, L. B.: The Quantitative Aspects and Dynamics of the Circulatory Mechanism in Arterial Hypertension, Am. Heart J. **5**: 448 (April) 1930.

6. Blumgart, H. L., and Weiss, Soma: Studies on the Velocity of Blood Flow: IV. The Velocity of Blood Flow and Its Relation to Other Aspects of the Circulation in Patients with Arteriosclerosis and in Patients with Hypertension, J. Clin. Investigation **4**: 173 (June) 1927; Clinical Studies on the Velocity of Blood Flow: IX. The Pulmonary Circulation Time, the Velocity of Venous Blood Flow to the Heart, and Related Aspects of the Circulation in Patients with Cardiovascular Disease, ibid. **5**: 343 (Feb.) 1928.

7. Ellis, L. B., and Weiss, Soma: The Measurement of Capillary Pressure Under Natural Conditions and After Arteriolar Dilatation in Normal Subjects and in Patients with Arterial Hypertension and with Arteriosclerosis, J. Clin. Investigation **8**: 47 (Dec.) 1929.

The majority of therapeutic agents used in the treatment of arterial hypertension have been advocated on the following grounds: (*a*) that they reduce the blood pressure in normal animals, or in animals in which the arterial pressure has been experimentally elevated; (*b*) that they reduce the blood pressure of healthy individuals and of patients with arterial hypertension; (*c*) that they improve the symptoms and the "general condition" of the patients.

It should now be emphasized that, even although a drug or therapeutic agent fulfils any or all of these conditions, its usefulness in arterial hypertension cannot be considered established. Moreover, in numerous instances, even these relatively inadequate conditions are not fulfilled. Acetylcholine is one of the substances considered beneficial in hypertension on the basis of pharmacologic observations. The profound vasodilator effect of acetylcholine in anesthetized animals was demonstrated in 1906 by Hunt and Taveau [8] and has been subsequently confirmed by numerous investigators. In animals receiving intravenously dosages as small as 0.000001 Gm. there is frequently a distinct fall in



Changes in blood pressure and heart rate following the administration of 5 grains (0.3 Gm.) of sodium nitrite by mouth to a patient with arterial hypertension: solid line, systolic blood pressure; broken line, diastolic blood pressure; dotted line, heart rate.

arterial pressure. We have made numerous observations of the effect of acetylcholine in normal human subjects and patients with hypertension. In neither group was any effect whatever found on the blood pressure or heart rate following intramuscular injections of 0.4 Gm., and in only one case out of twenty did the blood pressure drop following an intravenous injection of as high as from 0.05 to 0.1 Gm. a minute maintained for ten minutes. The drug is destroyed almost immediately in the blood stream and such vasodilator action as it does exert in man is compensated for by other factors of the circulation, so that the systemic blood pressure is maintained at its original level. The fallacy of inferring effects in man from observations made on anesthetized animals thus becomes apparent.

The unreliability of conclusions drawn from animal experiments alone is also shown by considering the action of histamine.[9] Histamine, like acetylcholine, exerts a powerful depressor action on the circulation in animals. We have studied the effect of this substance following continuous intravenous injection in human subjects both with normal and with elevated blood pressures. It was found, in dosages of from 0.02 to 0.04 mg. a minute, that the blood pressure either remained unaltered or underwent very slight, transient and inconstant fluctuations both upward and downward. Although the animal experiments suggested that histamine might prove of value as a means of lowering the blood pressure, when critical observations were made on man it was found to be useless.

To illustrate the fact that a drug may lower the blood pressure in normal and in hypertensive individuals and its therapeutic effect still be of doubtful value, our observations of the effect of sodium nitrite may be cited. Sodium nitrite, in doses of from 1 to 5 grains (0.065 to 0.3 Gm.) by mouth, does lower the blood pressure in man. A typical picture of the effect of the drug in arterial hypertension is given in the accompanying chart. Within about ten minutes of the time of administration of the nitrite there is an abrupt fall in the blood pressure. The pressure may remain at this low level for only a few minutes, although some lowering usually persists for from one to three hours. The extent of the drop in pressure is somewhat increased with the larger doses but is in no direct proportional relationship, and there is a great variation in its effect not only in different individuals but also in the same person at different times. Moreover, there may be unpleasant subjective symptoms from the nitrite which are often quite out of proportion and apparently unrelated to the fall in blood pressure. Whether this temporary lowering of the blood pressure has any beneficial effect on the cardiovascular system is highly questionable. In the presence of degenerative changes in the arterioles, sudden and repeated relaxation of the lumen may eventually lead to serious consequences.[10] During the past seven years a few instances were observed by us in which close relationship existed between the onset of cerebral accidents and the beginning of the administration of nitrites.

On the basis of these observations and conclusions, one may define certain of the pharmacologic and therapeutic characteristics essential to a substance that is to be beneficial in arterial hypertension. It is obvious that such a chemical substance must decrease the arteriolar resistance without disturbing essentially the other fundamental, normal characteristics of the circulation such as the cardiac output, the velocity of the blood flow or the circulating blood volume. The effect of the substance and the persistence of its action on the blood pressure must be such that by repeated administration of the drug marked fluctuations in the blood pressure are avoided. Establishment of a permanent lower level should occur gradually. The normal vasomotor responses essential to normal bodily functions should not be affected. A vasodilator substance that fulfils these requirements and hence is beneficial in the general treatment of arterial hypertension is not available or, at least, it has not as yet been proved of value by exact observations.

THE MANAGEMENT OF THE PATIENT

Management of the patient in accordance with the individual clinical manifestations and the avoidance of a rigidly outlined routine are the keynotes of the successful treatment of arterial hypertension. The

8. Hunt, Reid; and Taveau, R. deM.: On the Physiological Action of Certain Cholin Derivatives and New Methods for Detecting Cholin, Brit. M. J. **2**: 1788, 1906.

9. Weiss, Soma; Ellis, L. B., and Robb, G. P.: Bodily Responses in Man During the Continuous Intravenous Administration of Histamine, Am. J. Physiol. **90**: 551 (Oct.) 1929.

10. Weiss, Soma: The Nature and Management of Cerebral Hemiplegia in Patients with Arterial Hypertension, M. Clin. North America **13**: 111 (July) 1929.

establishment of the diagnosis should be followed by a search for the factors active in the case. Fluctuations in the blood pressure and the factors on which these fluctuations depend should be ascertained. A fixation of the blood pressure at a high level is generally indicative of a more severe disturbance of the vascular system (fixed hypertension) than a fluctuating level of the blood pressure (functional hypertension). The functional capacity of the heart should be evaluated, consideration being given to the opinion of the patient as to the degree of limitation of activity. Observations of the response of the cardiac rate and respiration of the patient to a simple climbing exercise is the most useful test for estimating cardiac reserve that is possessed at present. Determination of the cardiac size by physical signs and by teleroentgenographic examination gives valuable data for estimating the morphologic state of the heart. The morphologic and functional condition of the observable arteries should be gaged so far as possible. Certain conclusions as to the clinical state of the vascular bed can be drawn by studying the normal and the reserve functions of various organs. Sudden occurrence of vertigo, dizziness, temporary palsies, dyspnea, polyuria, sugar in the urine or astasia-abasia often is indicative of impending impairment of the vessels of the brain, heart, pancreas, kidneys or extremities, respectively. The examination should include the psychic state. Once the combined knowledge of the pathogenesis and the individual evolution of the arterial hypertension is established, one may proceed to treat the patient.

A proper understanding of the personality of the patient will, of course, determine whether or not it is advisable that he should be told the general significance of his condition. On the whole, it is advisable to avoid his concentrating attention on the level of his blood pressure. Anxiety induced by "blood pressure phobia" often is responsible for further accentuation of arterial hypertension. It makes the patient introspective, neurotic and irritable. In such instances the significance of the condition should be minimized. In other instances, because of lack of proper respect for the medical advice, it is necessary to confront the patient with the reality of the situation.

Seldom, except in certain cases of malignant hypertension, is it necessary for a patient with uncomplicated hypertension to become a complete invalid. The mental unhappiness in such cases will counterbalance any beneficial effect of physical rest. The severity and the clinical progress of the hypertension, the nature of the patient's occupation, and his economic status will influence the medical advice. Patients with uncomplicated hypertension tolerate moderate exercise well and react to such exercise with the same qualitative physiologic response as do normal individuals. It is necessary, however, to rearrange the life of the patient in such a manner that he may learn to relax. Night work should be avoided. The patient should take, if possible, a midday rest of one or two hours' duration and should sleep from eight to ten hours regularly. Week ends should be spent in quiet relaxation and in engaging in some light sport or hobby. In more severe cases, rest periods of from three to ten days should be taken several times a year. Strenuous sports, such as tennis, swimming or squash, should be avoided. Mild sports in moderation may, on the other hand, be very beneficial. Excesses, in general, are harmful. By far the majority of the patients with severe hypertension have never acquired the ability to perform their daily activities in a routine way. If psychic trauma is suspected, a proper psychotherapeutic approach and influence on the patient will give most gratifying results both in gaining the confidence of the patient and in beneficially influencing the hypertension. Optimism should dominate the attitude of the physician.

No special diet has proved of definite value. As a general preventive measure, it is advisable to outline a well balanced diet which contains enough protein to supply about 10 per cent of the total calories. Salts should be kept relatively low by using only a small amount in cooking and none at the table. Spices should be avoided. If the patient is overweight, the total calories should be below the requirement. A gradual loss of weight produces a most gratifying effect both on the symptoms and on the blood pressure. Water intake should be free. The beneficial effect of drinking large amounts of water has not been established, and, on the other hand, the cardiac work may become increased appreciably by a large fluid intake.

The use of tobacco is not generally contraindicated in arterial hypertension, unless, as is sometimes observed, patients show a hypersensitivity to it by an accentuation of symptoms and an elevation of blood pressure. In such hypertensive patients even very small amounts of nicotine may be responsible for serious symptoms and complications. The use of tobacco in such patients is to be permanently prohibited.

The bowels should be kept free and daily action without strain assured. Rupture of minute cerebral vessels leading to severe hemorrhages occurs occasionally during straining. There is a rather marked tendency to constipation in patients with malignant hypertension, although in benign hypertension constipation is not always present. Magnesia magma and phenolphthalein are useful laxatives in keeping the bowel function normal. Not infrequently the establishment of a regular regimen is followed by definite improvement in the general symptoms and a lowering of the arterial pressure.

The beneficial effect of balneotherapy is through its action on the central nervous system. The baths should be moderately warm and not below 34 C., for baths below this temperature elevate the blood pressure.

In a certain group of cases there is apparently a definite association between the onset of the menopause and the occurrence of an increased blood pressure. It is impossible to distinguish between the symptoms due to the climacteric and those caused by hypertension. An analysis of a group of patients at the menopause revealed that the nature and frequency of occurrence of symptoms was essentially the same whether or not hypertension existed.[2] Attention in these cases should be devoted to stabilizing and lessening the symptoms associated with the menopause, with the result that in many of the patients a beneficial effect on the blood pressure will follow. Although its value is by no means definitely established, in certain instances the empiric administration of some preparation of the ovarian gland may be followed by symptomatic improvement.

For patients in whom marked arterial hypertension is associated with definite local and systemic evidence of hyperthyroidism, ligation or resection of the gland is advisable. In the few cases we have observed, there was no essential change in blood pressure, but the patient showed, nevertheless, marked improvement as far as symptoms and heart function were concerned.

Foci of infection should be searched for and eradicated. Such foci, of course, do not necessarily have

any relation to the hypertension. Nevertheless, in certain cases, especially in malignant hypertension or in cases of subacute or chronic nephritis with hypertension, successful elimination of the infection may bring about a quick return of the blood pressure to a normal level. Moreover, infections, even if they are not the cause of the existing hypertension, may lead indirectly to vascular degeneration and hence add to the unfavorable factors that hasten the appearance of complications. Head colds, sinus infections, tonsillitis and upper respiratory infections should therefore be looked on as conditions of serious potential consequences. Patients should be kept in bed during the period of such infections. It is astonishing with what frequency congestive failure has been precipitated by an acute infection.

Drug therapy, for reasons given, is of secondary importance. Certain sedatives, such as the various members of the barbituric acid derivatives and perhaps the chloral group, which have a relative affinity to the vasomotor and other vegetative centers, are of great benefit. Phenobarbital in a half grain dose (0.03 Gm.) twice daily lowers the blood pressure desirably in many patients; in others it prevents undesirable fluctuations.

Administration of iodide as a preventive measure for arteriosclerosis is supported by a certain number of empiric results. Potassium iodide may be given in 5 grain doses (0.3 Gm.) three times daily for from eight to twelve weeks once in every six months.

In case there is a sudden rise in the blood pressure associated with alarmingly acute cerebral and cardiac symptoms (vascular crisis of Pal), administration of sodium nitrite in doses of from 1 to 2 grains (0.065 to 0.13 Gm.) three times daily may be indicated. Venesection and removal of from 400 to 800 cc. of blood may result in prompt improvement. The intravenous administration of relatively large doses of the barbituric acid derivatives may also be indicated in the presence of such a vascular crisis. Sodium phenobarbital may be used in doses up to 12 grains (0.8 Gm.) of 1 per cent solution injected slowly.[11] Repeated lumbar punctures may relieve the alarming cerebral manifestations.

An outline of the treatment of numerous complications of arterial hypertension is out of the scope of this discussion.

COMMENT

To what extent will the careful management of patients with arterial hypertension by the procedures that have been outlined alter their prognosis as to health and longevity? In a small proportion of cases the blood pressure will return to normal and the symptoms will disappear either permanently or for a prolonged period of time. Such remissions in the course of arterial hypertension may, however, occur spontaneously, and these individuals should live well regulated lives and be followed carefully. In a second group there will be some lowering of the blood pressure, although not to a normal level, with accompanying subjective improvement and some checking of the progress of the disease. A third and large group of patients will show no material lowering of the blood pressure, but their symptoms will be lessened and they will be enabled to live more comfortable lives. In certain of these, by the careful regulation of their mode of living, acute cardiovascular accidents will be averted, and to that extent their lives will be prolonged. The remainder, in particular many of the cases of malignant hypertension, will progress inexorably, apparently uninfluenced by therapy, to a fatal termination.

Pessimistic though it may seem, this presentation of the problem of the treatment of arterial hypertension is offered with the hope that it will yield constructive results. It is easy to be attracted by recognized therapeutic triumphs; it is also a common human fallacy to listen to and follow therapeutic claims that have no proper foundation in conditions in which "cures" are not available. But medical skill, wisdom and a therapeutic sense of proportion are more needed in the management of diseases in which specific therapy is not available than in morbid states in which routine administration of some therapeutic measures reestablishes health.

Boston City Hospital.

11. Weiss, Soma: Therapeutic Indications and the Dangers of the Intravenous Administration of Sodium-Phenyl-Ethyl Barbiturate (Sodium Luminal) and Other Barbituric Acid Derivatives, Am. J. M. Sc. **178**: 390 (Sept.) 1929.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. STIEGLITZ AND DRS. WEISS AND ELLIS

Dr. M. A. MORTENSEN, Battle Creek, Mich.: I wish to mention two or three things that I have learned from experience in the management of various types of arterial hypertension. In the first place, it has been called to our attention graphically that there are certain types of cases that are not influenced by any sort of therapy. The next point is that, in the group mentioned by Dr. Stieglitz, many patients have a variable blood pressure. When such a person presents himself for treatment, it is difficult to determine what therapy is going to do for him. Many of them have blood pressure return to a fairly normal range by simple management of habits, just as those that have some special therapy. I believe that if patients are studied carefully from the standpoint of their nervous reactions and temperamental state of mind, and their attitude of fear as to what may occur because of their blood pressure, physicians will be doing them a great service. Fear and other forms of anxiety can often be eliminated with great benefit. Recently I had a patient who had been told that her blood pressure was over 200. She was a woman, aged 33. That fact alone had instilled in her mind an extreme anxiety and fear, so much so that she was getting neither sleep at night nor relaxation during the day. After I had spent a few consultations with her trying to impress on her that there was no danger whatever even if her blood pressure was this high at her age, it was not more than two weeks before her blood pressure was down to 120. This makes it difficult in this group of cases to tell whether any medication does any good or not. I think it is exceedingly important that these people be managed, as was intimated by Drs. Weiss and Ellis, as to sleep, diet and proper elimination, and if one can do that and relieve anxiety, I think one has done a great deal for these patients with hypertension, regardless of any special medication.

DR. H. A. WILDMAN, Wooster, Ohio: Drs. Weiss and Ellis mentioned, in passing, the use of potassium iodide in arterial hypertension. I believe that Dr. Stieglitz was contemplating a study of this drug and I should like to ask him what his experience with it was. I also wish to ask Dr. Stieglitz whether hemoglobin and methemoglobin determinations were made in this study. Is there any change in the blood picture from prolonged use of bismuth subnitrate? Could the depressant action of the bismuth ion on the cardiovascular system help account for the action of the bismuth subnitrate? Drs. Weiss and Ellis mentioned overweight as a factor in hypertension. When I can persuade my obese patients with hypertension, all of whom are between 17 and 22 years of age, to reduce in weight, there is a decided reduction of blood pressure. Drs. Weiss and Ellis mentioned participation in strenuous sports. I have had a peculiar experience with this phase of the problem. Our best cross-country runner two years past had a systolic pressure ranging up to 165, at the age of 20. After a week's practice, at the beginning of the 1927 season, his systolic pressure rose from 132 to 142. Against my advice he continued, and he finished the season with a systolic pressure of 120. I have

noted that regular exercise results in reduction of blood pressure in some of these young persons. The man just mentioned apparently had excellent vital capacity, for he would finish his five-mile run well in the lead of all others blowing up a balloon to show that he was not "winded." I would like to know what effect the consistency of the arteries has on blood pressure readings. There is an old man in our town whose blood pressure physicians have been trying to read for five years; the 300 mark on the sphygmomanometer is not high enough. He enjoys excellent health and yet no one can read his blood pressure. What effect does the hardness of this man's arteries have on the attempted blood pressure readings?

DR. E. C. THRASH, Atlanta, Ga.: In treating these three types, it must be considered that it is not a far cry between arthritis and endarteritis. I think that arteriolar sclerosis might be better termed intimitis, and if it should be treated along the same lines as rheumatoid infections, some results might be obtained. If rheumatoid infections, not rheumatic fever, which is recognized as a type, is seen sufficiently early, from 50 to 60 per cent of the patients can be cured. The same effect probably is had on the endothelial cells of the intima of the vascular system in these disturbances; that is, arteriolar sclerosis, which takes place in the articular rheumatoid infections. I have been treating cases of rheumatoid arthritis with mercuric cyanide, intravenously, with passing good results. Probably bismuth has somewhat the same effect in arteriolar sclerosis as it has in syphilitic disturbances. How it produces results there is not known; how iodides or mercury produce results is not known; but they all do and they must be given empirically until more is learned of their specific action. Bismuth does not cure syphilis by relaxing and releasing the tension of the vascular system; but bismuth benefits it. This vague, unknown infection of the intima is certainly similar to that of the joints and treatment might be considered accordingly. The essential hypertensions are spastic and there is no condition or infection of the arterioles; but there is some endogenous or exogenous toxin that either may or may not be of bacterial origin, some faulty metabolism, some endocrine disturbance, all of which must be considered in an effort to find etiologic factors. In spastic disturbances of essential hypertension, I have had good results from bleeding, not just simply getting blood to relieve the pressure but taking blood once a week in small quantities, say, from 300 to 400 cc. I think it produces a stimulating action on the hematopoietic system and in this way aids in overcoming maladjustments. I have had excellent results in this type from bleeding four or five time repeatedly in small quantities. In my laboratory it was observed that people who were bled that blood might be obtained would become roseate and improve in health. I felt that this improvement was due to drawing the blood constantly and based this method of bleeding on the idea. I was well pleased in a number of cases.

DR. N. S. DAVIS III, Chicago: I have tried out the bismuth subnitrate treatment in a few cases but not with as striking results as Dr. Stieglitz has obtained, perhaps because I have not carried it on long enough. However, I do believe that there is some real nitrite absorption with the administration of this drug, because in mild cases of angina pectoris I have given the drug as a substitute for glyceryl trinitrate or other vasodilators and the patients have ceased having the attacks. I do feel that it is a palliative treatment and that efforts must be continued to try to find the fundamental causes of hypertension. It does seem to me that this is a disease that certainly is worth treating and that an effort should be made to use whatever is available to relieve the hypertension and not just let it proceed as it may. I have also seen a few cases that would be classified as malignant hypertension in young individuals whose disease apparently has run a rather brief course, but I had known them for several years and I knew that when they were in their early twenties they were having pressures of 130 and 140 and they died with high pressures, from 200 to 300, when they were 35. That would be typical of a malignant type of hypertension because until within a year or so of their death they were getting along comfortably with pressure never over 150. One of those men said at least ten years before his death that he knew he was going to die young, that he was going to die of hypertensive disease, and his reason was that both his mother and father had died under 50 of hypertensive disease. The other patient I mentioned also had a great deal of hypertensive disease in his family.

DR. LESLIE T. GAGER, Washington, D. C.: While it is quite true that an immediate and well defined etiology for hypertension remains undiscovered, it is also true that the mechanism responsible for high pressure is well understood, and that this abnormal arteriolar constriction—the increased tonus or spasm in the peripheral blood stream bed—can be combated. The essential thing, therefore, is vasodilatation—and not primarily reduction in arterial pressure—in order that the blood may convey nutrition to the tissues without requiring that extra energy for its propulsion which necessitates hypertension. In other words, by restoring normal peripheral circulation, the compensatory action of the heart is made unnecessary. I believe that efforts, both general and specific, in the way of therapeusis are important. I hold that these patients should not be allowed to go untreated. Why? For one reason, because a considerable number of statistics from life insurance medicine—which, after all, is dealing with cold facts—show that even when the pressure rises 10 or 15 mm. above normal the increased mortality rises 36 per cent above the usual expectancy, and as the hypertension goes higher the extra mortality mounts even more rapidly. Again, on the clinical side, experience convinces me of the prompt relief of symptoms that follows reduction of high pressure in these patients, provided always the extent and degree of their anatomic lesions have not yet hopelessly altered vascular reactivity. Therefore, I believe in the value of substitutive therapy, looking to the study of physicochemical changes in the smooth muscle cell of the arteriole, and their modification, to provide essential steps in the furtherance of the understanding of hypertension.

DR. L. G. ROWNTREE, Rochester, Minn.: The great difficulty in the treatment of hypertension is lack of knowledge of its etiology. Until that has been determined, there is no way of applying the most rational type of therapy to this condition. The question of comparison of results with various methods of treatment is tremendously interesting but difficult to answer. I am going to suggest to Dr. Stieglitz that he include somewhere in his communication a statement of what constituted the original pressures as he published them. I have found during twenty years' experience that the results of therapeutic measures cannot be judged until after certain things have been done. The first is three days' rest. In the vast majority of cases there is a tremendous reduction in pressure, in many instances a disappearance, particularly in the type Dr. Wilder discussed. If one makes a twenty-four hour blood pressure determination, at hourly intervals, he usually finds the blood pressure at, say, 210 during the day time, and during sleep it may go down to 140. That gives a clue within twenty-four hours of what can be anticipated from treatment. If, on the other hand, it is the malignant type, which Dr. Keefe has described, it will probably be 210 or 240 and stay there. That will give an index of what one is dealing with. It is one thing to affect the blood pressure that sleep will affect favorably and another to affect a serious type of malignant hypertension with arteriolar changes. I want to say amen to the paper by Drs. Weiss and Ellis. It is as fine a summary of the subject as there is. It contains nothing new but it is judgment from beginning to end and, I think, expresses the situation as well as it can be expressed at the present time. I should also like to call attention to the fact that there is no occasion for pessimism in dealing with patients with a blood pressure that reduces easily. Management, as indicated by the Boston group, is wanted, and not treatment. I suppose it would be a tremendous surprise to people at large to know that in the Mayo Clinic there are among the seniors men who have carried on for years with management but without treatment of their hypertension.

DR. RUSSELL M. WILDER, Chicago: I suppose it is agreed that, in general, there are three types of hypertension: first, that which is associated with renal disease, nephritis; second, that which is characterized by thickening of the media and hyperplasia of the intima of the arterioles, so-called arteriolar sclerosis, and, third, what has been called the simple or benign hypertension or the hyperpiesis of Allbutt. I suppose the

majority are in agreement that for the first two of these types of hypertension there is relatively little that can be done and it is questionable whether anything should be done since both in nephritis and in arteriolar sclerosis the hypertension is, in a sense, a compensatory mechanism, interference with which is likely to lead to an inability to get rid of the end-products of metabolism in the nephritic patient or in an actual ischemia of important parts of the body in cases of arteriolar sclerosis. The question, then, is narrowed down to the treatment of simple or benign hypertension. Dr. Stieglitz's suggestion is extremely interesting, particularly because it does exactly the thing which Dr. Ellis has said was desirable in any medication for hypertension; namely, it does not produce an acute or critical fall of the blood pressure, and it does maintain a more or less continued mild reduction of the blood pressure. On the other hand, it is extremely difficult to interpret the results of treatment in hypertension, and while Dr. Stieglitz's work has been carried on with great care, the spontaneous fluctuations of blood pressure that occur, either spontaneously or as a result of such more general measures as Drs. Weiss and Ellis have reviewed, are so numerous that it is extremely hard to be certain that any specific therapy used has accomplished a reduction. One would like to know for certain whether bismuth subnitrate is really reduced in the intestine, also whether or not nitrite ions are actually absorbed into the blood stream. I wonder whether Dr. Stieglitz can give positive evidence of this.

DR. EDWARD J. STIEGLITZ, Chicago: I want to emphasize what Dr. Ellis reiterated, that the transient vascular relaxation and depreciation of the blood pressure with the soluble nitrites is curatively valueless. Fifteen minutes, half an hour, means nothing in a lifetime. The persistent, prolonged relaxation, week in and week out, for many weeks, is an entirely different story. Bed rest for an hour a day is essentially unnecessary. Also therapy in institutions is essentially unnecessary. It is not necessary for the individual as a whole to rest, but for the vascular system to rest, and the vascular system can rest while the man goes about his business. As regards Dr. Wilder's questions, I have not differentiated these cases into three groups. My results are represented as the average for the 200, not for individual cases. The average of 200 cases will eradicate the spontaneous fluctuations and the spontaneous variability which all know. As regards the fear of reducing the blood pressure too low and causing interference with the renal mechanism, I think that is greatly exaggerated. I have seen instances in young people with hypertension sufficiently severe to cause considerable alarm, with a diastolic pressure of from 130 to 140, extensive albuminuria, and impairment of renal function, in which the impairment of renal function disappeared on reduction of the hypertension. To avoid confusion as regards the bismuth subnitrate: the bismuth has nothing to do with it; it is the nitrate. The bismuth merely makes it relatively insoluble. Anent evidence that nitrites are absorbed: Nitrate ions are detectable in increased quantities in the urine during the administration of bismuth of nitrate. Regarding Dr. Rowntree's remarks: Factors of etiology are multiple and rarely identical in individual cases. The original blood pressure readings consisted in the average of three readings taken prior to any treatment for each case. The average of the first three readings greatly diminishes the emotional factor. Bismuth subnitrate is merely a part of the management; it does not constitute a cure-all and does not produce any miracles. I have not studied the methemoglobin in these cases. So far as I have been able to determine, there is no evidence of absorption of bismuth. Iodides are essentially valueless. I want to emphasize the importance of the diastolic pressure in point of view of prognosis and of therapeutic results. The systolic pressure may fall merely because of an exhausted heart with a diastolic pressure remaining high, which is much worse prognostically than a higher systolic pressure with the equivalent diastolic pressure.

DR. LAURENCE B. ELLIS, Boston: There is a distinct group of definitely obese patients in whom hypertension is found. Many of these are women at the menopause. It is impossible to state exactly what the relationship between the obesity and hypertension is; they may be interdependent or both dependent on some other factor. In any case, I think it is definitely proved statistically that in many patients reduction of weight will effect a reduction of blood pressure. In regard to the question as to the effect of violent exercise lowering the blood pressure, it is extremely dangerous to draw conclusions from one case in a condition in which the variability of blood pressure is as great as it is known to be in essential hypertension. On the contrary, since it is well known that violent exercise sends up the blood pressure of normal individuals, and since a great many people with hypertension die during marked exertion, we feel we should warn our patients against marked exercise. In regard to the effect of the consistency of the arteries in obtaining blood pressure readings, my personal experience is that one encounters difficulty in getting such readings more often when the pulse pressure is low than in the presence of arteriosclerosis. I should merely like to emphasize our feeling that hypertension in itself is worth treating. As Dr. Gager has already pointed out, statistical evidence demonstrates the prognostic significance of the level of the blood pressure. It is known that most patients with hypertension die as the result of cardiovascular failure of one sort or another, and we feel that the degenerative lesions in the cardiovascular system are in part at least the direct result of a maintained high arterial tension.

THE SIGNIFICANCE OF ANHYDREMIA IN EXTENSIVE SUPERFICIAL BURNS*

FRANK P. UNDERHILL, PH.D.
NEW HAVEN, CONN.

The adequate management of a serious burn demands the skill and knowledge of both the physician and the surgeon. By reason of the emergent character of most burn cases and because of lack of knowledge relative to the newer conceptions of the nature of the processes underlying a burn, treatment is usually regarded as exceedingly difficult and unsatisfactory.

With the advance of industry, burns are becoming of greater frequency and consequently of greater importance to the practitioner. Their increased occurrence lays an obligation on the medical profession to become conversant with the fundamental conditions induced by a burn and to become familiar with the most efficient methods of treatment. It is not sufficient to treat the wounded area only. Much more important is the recognition of systemic effects and the immediate institution of proper treatment to combat these effects. "What does it profit a man if he dresses the wound beautifully and yet loses his patient?"

My own[1] introduction to a study of burns was precipitated in 1921 by the entrance into the New Haven Hospital[2] of more than a score of burned patients as a sequel to a theater fire. Since that time the conditions induced by burns have been continuously under investigation both from the clinical aspect and from the point of view of experimental work with animals. This experience is the basis for my interpretation of the effects induced by a burn and it is the substance of the present discussion.

CONCENTRATION OF BLOOD

When an individual suffers an extensive superficial burn there are three generally accepted conditions that may demand attention: (1) shock; (2) so-called toxemia; (3) the wound itself. Granting for the moment

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* From the Department of Pharmacology and Toxicology, Yale University School of Medicine.

* A Clinical Lecture read at the Annual Session of the American Medical Association in Detroit.

1. Underhill, F. P.; Carrington, G. L.; Kapsinow, Robert; and Pack, G. T.: Blood Concentration Changes in Extensive Superficial Burns, and Their Significance for Systemic Treatment, Arch. Int. Med. **32**: 31 (July) 1923. Underhill, F. P.: Ann. of Surg. **86**: 840 (Dec.) 1927; Tr. 7th Annual Safety Council, 1928.

2. These patients were admitted to the Surgical Service of Dr. Samuel C. Harvey, to whom I am indebted for cooperation in the study of burns.

the validity of these conceptions, still another condition of probably even greater significance is the production of a state of concentration of the blood, or anhydremia. It is to this condition that I wish to call attention and to point out the rôle it may play in the development of systemic effects. An understanding of its significance is of the greatest value in the treatment of the patient and in many instances is the determining factor in the outcome.

Concentrated blood is a factor that cannot be left out of consideration in the study of any abnormal condition in which it manifests itself. Blood concentration to even a moderate degree results in recognizable symptoms. The first indication noted is impairment of the circulation. When loss of water from the blood becomes great, the circulatory deficiency becomes magnified. The thick, sticky blood, which may be almost black, finds great difficulty in passing through the capillaries, the circulation here is slowed, and the blood is quickly robbed of its oxygen by the tissues. Because of its slow progress through the capillaries the blood becomes an inefficient oxygen carrier and the tissues in general suffer from inadequate oxygenation, resulting in partial asphyxiation. The large blood vessels are not properly filled, and the heart pumps only a portion of its normal volume at each stroke. In consequence of the partial asphyxiation of the tissues there may be alteration in the metabolic processes, and when the concentration of the blood has reached a certain level, a disturbance occurs in the heat-regulating mechanism; the temperature, which is usually high at first, falls, and vital activities are suspended.

The background for the possibility of concentration of blood in burns was gained by an extensive experience [3] during the World War with the so-called war gases—chlorine, phosgene and chlorpicrin—specific lung irritants causing massive pulmonary edema. The edema induces a marked concentration of the blood. It may be somewhat difficult at first to correlate the conditions existent in massive pulmonary edema induced by an irritant agent with those obtaining with a superficial burn. Further thought, however, demonstrates that in both abnormal states one fundamental fact stands out clearly; namely, that either an irritant gas or heat leads to an extreme inflammatory reaction and destruction of tissue. One may consider that in both instances a burn is produced. In both instances there is a membrane stretched between the atmosphere and the blood. In each instance the inflammatory reaction induced by its appropriate agent—irritant gas in the case of the lung, heat on the skin—meets a response on the part of the body. Fluid is poured out on the surface of the injured area, presumably as the first step in the reparative process. To a certain degree, the greater and more acute the inflammatory reaction the greater or more rapid will be the response. Fluid rushes to the burned skin with great rapidity and is lost to the body, or if the skin is intact blisters are formed or the part affected becomes edematous with extreme celerity. This rapid and continued loss of fluid from the blood quickly induces a marked concentration which becomes a factor of prime significance in the fate of the patient. It is also quite apparent that the quantity of fluid lost through a burn will vary with the extent of the surface injured. The more extensive the burn, the greater will be the loss of water, a fact that coincides with clinical experience that the more extensive the area of a burn the more serious it is. Some skepticism may exist concerning the correlation of loss of water and of concentration of blood. It may be doubted that the loss of water is sufficiently great to account for the anhydremia. Clinically it is impossible to estimate the loss of water for obvious reasons. With experimental animals, however, such procedures are practicable. With a burn involving approximately one sixth of the surface area of the skin, loss of fluid may occur to the extent of 70 per cent [4] of the total blood volume in a period of less than twenty-four hours. Such a loss of fluid occurring rapidly is in itself of paramount importance. If, however, more extensive burns cause loss of water approaching the same degree, and there is reason to suppose this to be true, then the loss of water may be several times greater than the total blood volume—a loss which the body's facilities for water storage cannot compensate—hence the maintenance of a concentrated blood with its subsequent detrimental effects.

If it is permissible to apply the results obtained in animal experiments to man, surprising figures for loss of water are obtained. Assume that in a man of 65 Kg. a burn is inflicted involving one sixth of the body's surface. Such an individual would have an approximate blood volume of 5,000 cc. If 70 per cent of the blood volume were lost to the wounded area this would mean a fluid loss of 3,500 cc. within a period of less than twenty-four hours. It is not at all uncommon for burns to involve one third of the body's total surface area, which would mean a loss, perhaps, of from 6,000 to 7,000 cc. It must be quite apparent that the introduction of large volumes of fluid is plainly indicated.

The query may be made: "As such a large proportion of the body is made up of water, why is it possible that a condition of blood concentration can occur? Why is not water supplied from the tissues to meet the deficiency of water in the blood?" The answer to these questions cannot be dogmatically stated. Investigations have been carried through to determine the factors involved. It may be stated that in some instances the body is able to compensate for a concentrated blood, that is, in certain instances a high degree of concentration may be reached; but it is not maintained for an extended period. Under such circumstances it may be assumed that water stored in the organism has been poured into the blood. This type of action, however, can go on only to a limited extent. Beyond these limits the organism fails to respond, and when this failure occurs concentration of the blood will be maintained to the detriment of the entire body. One knows little of the actual water reserves of the organism. So far as may be determined, there is no specific organ or tissue that serves this purpose. On the contrary, it is quite possible that all organs and tissues have the capacity of storing water to a certain limited extent in the form of what Gamble has called "interstitial water" as distinct from water contained within the cells of the tissues. When the interstitial water reserve has been exhausted no more water is available for the general water needs of the body, for it has been demonstrated repeatedly by others and by me that there are only a few conditions under which it is possible to cause the tissue cells to give up their water. There is a certain unknown but presumably definite water limit in the cells essential for the proper maintenance of physiologic rhythm. The tissues strive tenaciously to maintain this limit, which undoubtedly constitutes one of the factors of safety resident in the organism—a state of constancy of composition which Cannon has termed

3. Underhill, F. P.: The Lethal War Gases, Yale University Press, 1920; Harvey Lectures, 1917-1919.

4. Underhill, F. P.: Unpublished experiments.

homeostasis. If the cells are made to give up water to the extent that these limits are exceeded—and there is at least one experimental condition in which this is possible—then the organism invariably dies with great promptness.

If these statements may be accepted as representative of the limitations of water exchange in the body, it is natural to inquire next concerning the extent to which blood may be concentrated and life be continued without too great detriment. The answer to this query carries with it practical value as to the character of treatment to be instituted. Obviously the answer is difficult of attainment in clinical experience with burns —it must be sought by investigation with experimental animals. Such investigations have shown that concentrated blood in itself is not a serious condition if it can be quickly compensated. It is only when a blood highly concentrated is maintained for long intervals that permanent damage is evident. My experience would tend to indicate that an animal or man cannot long survive blood concentrated 140 per cent of the normal value. When the concentration reaches 125 per cent of the normal value, conditions for the maintenance of life are becoming precarious.

Thus far the loss of water only has been under discussion. While it is undoubtedly true that the concentrated blood is primarily due to water lost, such a conception gives only an incomplete picture of the changes that are occurring in the blood. Exhaustive analyses of the fluid lost to the burned area demonstrate that it has essentially the same composition as the blood plasma from which it came. In other words, the fluid poured out in the burned area must be regarded as blood plasma, containing similar proportions of proteins and inorganic salts, and, like plasma, clotting spontaneously, its appearance on the burned surface serving as it were the purpose of spreading an insoluble membrane over the injured area.

The character of the fluid with its content of nondiffusible proteins makes difficult the explanation of its passage through the capillary wall. Certain it is that under normal conditions these substances do not pass readily or rapidly. One must assume, therefore, that through the agency of heat the capillaries have become more permeable and allow these substances to pass. In experiments [4] with animals under conditions of a burn it is possible to demonstrate by means of soluble and diffusible dyes and with nondiffusible colloidal dyes that the capillary walls become permeable and allow the passage of a colloidal dye to the burned area, whereas under normal circumstances these dyes will not pass the capillaries. By means of such experiments it is also possible to demonstrate that the increased permeability is present within a period less than two hours, is maintained for from sixteen to twenty-four hours, and then the capillaries apparently regain their normal permeability. The increased permeability of the capillaries appears to be in one direction only; namely, from the blood to the tissue fluids. From the tissue fluid to the blood there is an apparent decreased permeability. This can be demonstrated in the experimental animal. Phenolsulphonphthalein injected into a burned area is absorbed ten times more slowly than in a normal animal or from the normal skin of a burned animal. Absorption is exceedingly slow for a period of at least five days. This fact can be demonstrated in an even more dramatic fashion. Doses of strychnine that will kill a normal animal in ten minutes if injected under the skin are without any noticeable influence when introduced into or under the burned skin. The effect is no greater than with an equivalent quantity of physiologic solution of sodium chloride. To state it differently, strychnine under the conditions of a burn is absorbed from the area of the burn at such a slow rate as no longer to exhibit toxic properties. A proper understanding of this mechanism of permeability is essential for the best results for treatment, to which reference will be made a little later.

If the discussion thus far may be summarized, it is evident that an extensive superficial burn induces a marked concentration of the blood, or anhydremia, which is responsible in large measure for the familiar systemic symptoms of a burned patient. The fluid poured to the periphery of the body is a response to the intense inflammatory reaction induced by the heat. The nature of the fluid closely resembles that of blood plasma which leaves the blood vessels as a result of greatly increased capillary permeability, and is reabsorbed with great difficulty.

How shall changes in concentration of the blood be measured? Of all the constituents of the blood only the red corpuscle fails to pass through the capillary wall. From this point of view it would appear that the measurement of the hemoglobin content of the blood should serve as an excellent indicator of changes in blood concentration. The employment of hemoglobin estimation as a measure of concentration of the blood has been justified by my own experience and that of others who have found in general that the changes in the hemoglobin parallel those of the total solids and the total plasma volume (dye method). This method makes it possible to determine changes in blood concentration rapidly and accurately and to follow the course of the changes at frequent intervals without especial discomfort to the patient.

It may be well to emphasize here that by means of hemoglobin estimations a group of burned patients may be divided into two divisions: (*a*) those with a highly concentrated blood and needing immediate treatment, and (*b*) those with lower values for hemoglobin and hence not in an immediately dangerous condition. It will be found that this division will correspond exactly with the clinical symptoms exhibited by the two groups.

Aside from the changes in water content of blood of a burned patient, the most striking alteration in the composition of the blood is that of the chlorides. In general, when blood is highly concentrated the sodium chloride content is distinctly low, and when the value for hemoglobin content is not greatly lowered the figures for sodium chloride approach closely those of the normal value. Expressing it differently, almost without exception the sodium chloride values are inversely as those for hemoglobin. On this basis the figures for sodium chloride may divide a group of burned patients into two divisions quite as sharply as the hemoglobin figures. The figures for sodium chloride are to be explained by the fact that when water moves it is accompanied by salt; in fact, salt is essential for its movement within the body.

OTHER CONDITIONS

Closely associated with concentration of the blood are two other conditions usually encountered in cases of burn; namely, a notably low blood pressure which may be accompanied by other clinical signs of a shock-like condition or a state of impending shock and an initial marked rise in temperature. My observations in burned patients have led me to the view that a highly concentrated blood may be a factor of prime significance in the development of a shock-like condition. In general

when the blood concentration is highest the pulse pressure is lowest. That other factors may play a contributing rôle is apparent from the fact that the reverse statement is not necessarily true, for some cases may show a low pulse pressure with only a moderate concentration of the blood, and others may give evidence of a highly concentrated blood with normal pulse pressure. The resistance or sensitiveness of persons to impending shock is well recognized, and it is intended to call attention to the relationship of blood concentration to a failing circulation rather than to dogmatize concerning the mechanism involved.

The relationship of temperature to concentration of the blood is close. In other types of blood concentration, notably in war gas poisoning, changes in temperature take place in one of two directions as a result of the degree of concentration of the blood. With a moderate blood concentration, and with the circulation maintained close to normal limits, the temperature rises above the normal. If the concentration of the blood proceeds to a point at which approximate normal efficiency of the circulation fails, the temperature falls rapidly to a point far below the normal, culminating in death. With burned patients, the early elevated temperature may undoubtedly be accepted as an expression of the effect of a highly concentrated blood. The later much higher temperature may be interpreted as a sequence of infection of the wounded area.

Another very serious effect induced by a concentrated blood is a distinctly impaired functional capacity of the kidney. Only occasionally does this organ show structural changes, but the functional impairment lasts as long as the concentration of blood persists. All evidence of renal injury disappears with the restoration of a normal degree of blood concentration. It would appear from these facts that the kidney is not capable of separating a normal urine from a concentrated blood. It is quite probable that the albuminuria and other evidences of renal involvement so often seen in burns are associated with the presence of a concentrated blood.

Perhaps the most dreaded complications of a burn are the effects that are attributed to the so-called burn toxin which is assumed to be formed in the burned area, absorbed into the blood, and in its circulation through the organs and tissues produces its detrimental influences. The toxin has never been isolated, however, and its nature is unknown. A great variety of substances have been suggested as the active agent and in turn each has been discarded. From a survey of the literature one gains the impression that the mere diversity of suggested poisonous compounds is a sufficient basis for the view that these alleged poisonous compounds are to be accepted as merely an expression of stages in the progress of chemical knowledge concerning proteins and the products of their disintegration. Each period of chemical advance has had its suggested toxin. For example, there have been periods when proteoses and peptones were assumed to be responsible for the detrimental or even fatal effects of a burn as well as of various other pathologic conditions. In like manner, "ptomaines," pyridine-like bodies, guanidine salts, toxic proteins and nucleoproteins have been designated. At present it is to histamine that one is inclined to ascribe active participation.

It is quite obvious that the solution of the toxin problem must be sought in animal experimentation rather than in clinical practice. Such an investigation has been carried through during the last few years with most interesting results. This experience has led me to doubt the existence of a specific burn toxin and to believe that the postulation of such a theory is wholly unnecessary. Moreover, I am of the opinion that the persistence of this point of view is an obstruction in the way of clarification of the burn problem. The effects attributed to the toxin may be satisfactorily explained in other ways. In place of the toxin theory I would substitute the idea that a burn establishes a set of conditions in the organism that will account for all the symptoms usually attributed to a toxin. This set of conditions is initiated by a great loss of fluid from the blood to the wounded area resulting in marked concentration of the blood and subsequently to an inefficient circulation causing changes in temperature, renal involvement, lowered blood pressure and other disturbances. Anatomic changes, such as hemorrhages and ulcers, may be attributed likewise to a single fundamental cause; namely, a local change in the circulation induced by the penetration of heat to the organs or tissues.

TREATMENT

In the development of my thesis it would appear that sufficient has been said to emphasize the significance of blood concentration or anhydremia in the syndrome characteristic of extensive superficial burns. It now remains to indicate the bearing of this conception on the problem of treatment of the patient. One must pause a moment to consider the character of the anhydremia encountered in a burn. Anhydremia may be of more than one type and recognition of this fact will aid much in interpretation of the response obtained in treatment. The anhydremia of simple water deprivation or that induced by drastic diarrhea, as in cholera, or that caused by excessive vomiting is quite different from the anhydremia characteristic of a burn. This fact becomes prominent when attempts are made to restore the blood to a normal level of concentration. There are at least two ways in which concentration of the blood may be induced. In the first place one may imagine that a fluid, nearly simple water, or at most a dilute salt solution in composition, leaves the blood vessels in response to the proper stimulus, resulting in a more concentrated blood, a desiccation, as it were. On the other hand, by a different type of mechanism or perhaps as a result of a different form of stimulus, fluid of the nature of plasma rather than of salt solution passes through the capillaries, leaving behind a blood more concentrated than normal.

From my conception of the mechanism involved in the loss of plasma from the blood, a change in capillary permeability is essential. In the loss of simple salt solution, no such alteration is necessary. In accord with these views the aim in treatment is the establishment of a degree of concentration of the blood within limits compatible with life. It is much easier to prevent blood from becoming concentrated than to restore it to a normal state once concentration has become established. For this purpose, forcing of fluid by whatever channel possible is recommended. It must be done at once and continuously. It will be remembered that for the first twenty-four to thirty-six hours the capillaries in the vicinity of the burned area are in a state of increased permeability and that fluid poured into the blood stream leaves it again very rapidly. It is for this reason that the administration must be continuous. The aim is to keep the blood as fluid as possible for an interval of from twenty-four to thirty-six hours—that is, during this period of increased permeability. Later, when the vessels are restored to their

normal capacity of holding fluid within themselves the blood will become of normal concentration again and the critical period will have passed. Too much emphasis cannot be placed on this point of *continuous* fluid administration.

What fluid should be given? In badly burned patients it is good practice to give a slow intravenous injection of 1,000 cc. of physiologic solution of sodium chloride as soon as possible. This may be repeated as occasion demands and it should be supplemented by the drinking of water, hypodermoclysis and proctoclysis. The intravenous introduction of the saline solution should be at a rate not greater than 25 cc. a minute. The intravenous method is especially recommended because its effects are immediate and it can be repeated more frequently than can hypodermoclysis, and it is not so painful to the patient. It is of particular advantage when there are no suitable unburned areas of skin available for the introduction of fluid subcutaneously. Again it sometimes happens that a patient cannot or will not cooperate in drinking water to the extent desired.

The introduction the sodium chloride solution rather than water is of distinct advantage because of the fact that the sodium chloride content of the blood may be markedly lowered. The salt introduced will tend to make up this deficiency and will undoubtedly aid also in the retention of the water. Davidson has advised the administration of tablets of sodium chloride by mouth to make up this deficiency in the blood. A solution of dextrose has also been recommended but has no advantage in most instances over physiologic solution of sodium chloride. Generally an acidosis is present, and it may be advisable to combat this by giving sodium bicarbonate by mouth or by rectal instillation. As the acidosis is of secondary importance, sufficient attention should not be given to this to detract from the success of attempts to reduce the concentration of the blood; for if the latter is satisfactorily accomplished the acidosis will clear up of itself, since the cause for its existence will have been removed.

If the mouth is involved in the burn, drinking of water may be impossible. Under these conditions from 2,000 to 3,000 cc. of physiologic solution of sodium chloride may be given by hypodermoclysis every twenty-four hours. As a supplement to other routes of fluid administration, from 6 to 8 ounces (175 to 235 cc.) of tap water may be given by proctoclysis every three hours.

How much fluid should be given? The demands for fluid sufficient to reduce concentration of the blood to a normal level vary with the patient. With some, less than 4 liters a day will be sufficient, with others the same purpose is accomplished only with 8 liters or more. From my own experience, quantities varying from 4 to 8 liters a day have generally been sufficient. The best criterion of the influence of the administration of fluid on the blood concentration is the frequent determination of the hemoglobin content of the blood. The administration of fluid may cause the hemoglobin figures to fluctuate at first in a remarkable manner; sometimes they are immediately lowered, again they may even exceed the initial high figures. Such results are probably to be regarded as evidence of an unstable equilibrium of the mechanism of water balance. This period of fluctuation of hemoglobin values soon passes and is followed by an interval in which there is to be observed a steady, fairly rapid fall in hemoglobin content. Coincident with this decrease in concentration of the blood, improvement in the condition of the patient takes place. With this type of treatment there are no evidences of intoxication. These patients do not present untoward symptoms such as delirium, unconsciousness, gastro-intestinal disturbances, hemoglobinuria or albuminuria.

In view of the discovery by Rowntree that excessive introduction of fluid into animals may produce a characteristic condition known as water intoxication, some apprehension may be present that the administration of large volumes of fluid to burned patients may lead to similar conditions. If the quantity of fluid necessary to induce water intoxication in the experimental animal may be applied as a measure to man, the minimum volume of fluid necessary would approximate 35 liters. It must be quite evident, therefore, that such fears are groundless.

Preceding or coincident with the development of blood concentration there may be evidences of shock or shock-like symptoms. The two conditions are undoubtedly closely interrelated since in experimental shock there is generally a state of blood concentration. It is not my purpose to discuss the question of shock. On the other hand, attention should be called to the fact that the treatment advocated here for the alleviation of blood concentration will also be of benefit in the prevention or amelioration of shock.

SUMMARY

It is apparent that in the early treatment of a burned patient several points are essential: 1. Control of pain by morphine and atropine. 2. Treatment to prevent or alleviate shock. If shock is present and there is a subnormal temperature, the immediate application of heat is indicated. Recitation of supportive measures to combat shock need not be given here. However, it may be of decided advantage to put the patient to bed without undressing him. When shock has abated and the temperature has risen again, the clothing may be removed. 3. The intravenous injection of saline solution as previously indicated. This may be repeated and should be supplemented by the introduction of fluid through all available channels. Hemoglobin estimations should be made at intervals of a few hours to determine the state of concentration of the blood and the possible need for increase in the amount of fluid introduced. 4. Finally, attention to the cleansing and dressing of the burned surface. The latter may be accomplished by the use of coagulant or drying measures, such as trinitrophenol, tannic acid, open air exposure or radiant and ultraviolet light therapy. In the management of the case it is to be emphasized that the systemic treatment in the early stage is of much greater significance than the treatment of the injured surface. It is of little value to make perfect dressings if the patient is allowed to die of shock or from the effects of concentrated blood.

CONCLUSION

A burned patient should be treated in a manner similar to a patient with a crushed leg or other extensive painful injury. Generally a surgeon does not operate immediately on a patient in a shocked condition. He first attempts to reestablish circulatory efficiency and when the patient is in proper condition the operation is performed. In the same manner the burned surface need not be treated until the circulation of the patient is again efficient. The patient does not die of the injury; death is caused by circulatory failure of one or another type. Delay in treatment of the injured area will not be detrimental. Early infection need not be feared since

there is little or no absorption from the burned surface. In treatment of the injured area the query may be made: why stop drainage by application of substances like trinitrophenol or tannic acid? Why not treat a burn like any other wound?

If the points of view that have been outlined are given practical application, a case of burn need not be regarded as hopeless. In the words of a recent writer,[5] "The utilization of these methods with skill and patience will give awards that will satisfy not only the patient but also the physician himself."

PELVIC IRRADIATION IN THE CHILD-BEARING WOMAN *

PALMER FINDLEY, M.D.
OMAHA

Irradiation therapy has encroached on the field of surgery to an ever increasing degree and is destined to make still greater inroads as the result of improved technic. It is fair to assume that there can be no epoch-making advances in the field of pelvic surgery. It remains to be seen how far pelvic lesions can be controlled and eradicated by means other than surgery. At the present time interest largely centers in the x-rays and radium as substitutes for surgery in the treatment of certain pelvic disorders.

Gynecologists and radiologists are not wholly in accord on the management of pelvic lesions found after the child-bearing period, but the problem becomes enormously complicated in the earlier years of sex life. To control hemorrhage, to relieve intolerable pain of menstruation, to check the growth of fibroid tumors and to alleviate their symptoms without producing permanent amenorrhea and sterility are indeed vexing problems. But the greatest concern is with the possible effects of irradiation on the fetus in utero and on the nonfertilized ovum in relation to future offspring. Animal experimentation and clinical observations are doing much to clarify these perplexing problems, but there is much yet to be done.

It was formerly believed that preconception irradiation could produce changes in the ovum that would result in the subsequent development of fetal anomalies. As the result of animal experimentation and clinical observations, the conclusion has been reached and is generally accepted that ova damaged by irradiation are incapable of fertilization. As a result, much prejudice against irradiation in the child-bearing woman has been dispelled. Matthews collected reports of 874 cases in which women were given preconception treatments by pelvic irradiation in the child-bearing age. Of the women giving birth to children subsequent to irradiation, twenty had normal babies, fifteen had miscarriages and three had premature babies. There were no anomalies. Douglas P. Murphy is doing extensive research, both experimental and clinical, on this problem and as yet is unwilling to affirm the possible ill effects of preconception irradiation on future offspring. Surely it is safe to conclude that preconception therapeutic pelvic irradiation of the ovaries is quite unlikely to affect future offspring. As yet there is no evidence to the contrary.

It has become a rule of practice to proscribe all therapeutic pelvic irradiation in pregnant women. Murphy reports 75 children born of 106 women irradiated during pregnancy. Of this number 38 (50.7 per cent) were defective and 37 (49.3 per cent) were normal. Of the 38 defective children, the defects were ascribed to parental and environmental influences in 10, and the remaining 28 defectives were ascribed solely to the effects of irradiation. Murphy and Goldstein find that postconception irradiation results in the birth of unhealthy children five times as frequently as does preconception irradiation. Bailey and Bagg, after much experimenting, conclude that the orderly sequences of embryonic processes are arrested and not seldom result in a great variety of physical defects in the growing fetus. Rats were found to have an underdevelopment of the brain cortex, and their eyes were sightless. Abortion was the rule when irradiation was administered early in pregnancy; when irradiation was done in the late months of pregnancy, such fetuses as survived usually proved to be sterile. It was observed that the corpus luteum of pregnancy underwent premature retrogressive changes.

Douglas P. Murphy, in his experimental researches, finds that preconception irradiation in rabbits delays the onset of pregnancy but with no disastrous effects on the offspring. Likewise pregnancy is seemingly prolonged as the result of preconception irradiation (Murphy, Driessen, Lacassagne, Coutard).

Concerning the effects on subsequent offspring in postconception irradiation, clinical observations are found not to tally with the experimental observations of Bagg of the New York Memorial Hospital. He has found abnormalities in the young of mice many generations after the first pair have been irradiated. Muller is quoted by Dr. G. Failla of the Radium Research Laboratory, Memorial Hospital, New York, as having proved through animal experimentation that abnormalities due to irradiation can be produced that are transmitted from generation to generation according to definite laws in genetics. No such observations have as yet been made in women who have had pelvic irradiation. The central nervous system of the fetus, especially in the early stage of development, is found to be highly sensitive to the influences of irradiation. The deformities noted are microcephaly, blindness at birth, spina bifida, clubfoot, alopecia of the scalp, ossification defects of cranial bones, hydrocephalus, divergent squint and deformities of the upper extremities.

It is agreed that pelvic irradiation therapy in the pregnant woman is likely to induce abortion; that the earlier the pregnancy and the greater the intensity of the rays, the greater is the likelihood of interruption of the existing pregnancy. It must be borne in mind that all such irradiated cases presumably represent diseased uteri which in themselves constitute a cause for abortion.

There is no evidence that diagnostic pelvic irradiation is harmful to the existing pregnancy. C. C. Norris would adopt the routine of doing an exploratory curettage before proceeding with pelvic irradiation. In the child-bearing age this procedure would eliminate the danger of irradiating an unsuspectedly pregnant uterus and in the post-child-bearing age the unsuspected cancer would be revealed. Percy W. Toombs [1] finds no likelihood of danger from diagnostic rays but

5. Pack, G. T., in Pack and Davis' Burns, Philadelphia, Lippincott, 1930.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-First Annual Session of the American Medical Association, Detroit, June 27, 1930.

1. Toombs, P. W.: Am. J. Obst. & Gynec. 17: 516 (April) 1929.

is in accord with all observers in the belief that therapeutic irradiation of the growing fetus is a positive menace. Microcephalia and micropthalmia are the lesions most commonly observed. Fetal anomalies (hydrocephalus, microcephalus) have been observed when irradiation was carried out late in pregnancy. Doll and Storrs find that microcephalic idiocy occurs only once in 10,000 births, while in the cases reported by Murphy there were 18 microcephalic idiots among the 75 babies born of women who had had pelvic irradiation during pregnancy.

With this evidence in hand, it is the part of caution to perform exploratory curettage before proceeding with pelvic irradiation in the child-bearing woman. And if, perchance, the pelvis is irradiated in the presence of an unrecognized early pregnancy, such pregnancies should not be permitted to proceed to term because of the great likelihood of fetal injuries. The intensity of irradiation and the period of fetal development are the determining factors. The younger the ovum and the greater the intensity of the rays applied, the greater the injury to the fetus. When pregnancy is associated with cancer of the cervix, operation is preferred to irradiation. To interrupt pregnancy in the presence of a cancerous cervix would entail grave danger of infection.

Irradiation as a means of producing therapeutic abortion is not dependable and should not be attempted Intensities of radiation not harmful to the mother may injure the fetus but are not likely to provoke abortion. The earlier in pregnancy the rays are applied, the more likelihood there is of interrupting pregnancy. Nurnberger believes that abortion following irradiation of the pregnant uterus is due to tissue changes in the endometrium and musculature of the uterus rather than to injury to the fetus.

In the child-bearing period, from adolescence to near the menopause, it is at times desirable to suspend the menstrual functions for a variable period and thereby produce temporary sterilization. Obviously this cannot be accomplished through surgical means. Temporary x-ray or radium sterilization is a possibility but always an uncertainty. Masterly technic is required if the desired results are to be obtained with any degree of accuracy. Only expert radiologists in association with experienced gynecologists should undertake the delicate task of temporarily suspending the menses in the child-bearing age. In view of the uncertainty attending such a procedure no radiologist should undertake to control the menstrual functions, short of inducing permanent sterilization, without the cooperation of a consulting gynecologist. It is the boast of the Doederlein clinic that they are able to effect temporary or permanent sterilization at will in 100 per cent of cases. Such perfection in technic is possessed by few and provides no licensure for common practice.

Ernest V. Seuffert says that, contrary to early opinions, it is contended that complete castration is never produced by irradiation in the child-bearing woman even in the presence of permanent amenorrhea. If this statement is accepted, it affords a convincing argument in favor of irradiation in the type of case in which dysmenorrhea cannot be controlled by surgical means short of extirpation of the ovaries. When all conservative measures, both medicinal and hygienic, have failed to control intolerable dysmenorrhea, rather than to resort to surgical castration, I have in a few instances resorted to radium irradiation. A dosage of from 200 to 300 mg. hours has been given and the results have been fairly satisfactory. With a single exception pain has been relieved and has not recurred with the return of menstruation. In a girl, aged 20 years, who had become a drug addict, irradiation in a dosage of 600 mg. hours, repeated six months later, had no effect. I am in the habit of using a 2 mm. brass filter with rubber dam. I agree with Stacy and Mussey that there is no uniformity in results. In one case 100 mg. hours may suffice and in another 700 mg. hours may fail. It is best, then, to proceed cautiously by administering a moderate dose that can be repeated if necessary. It would be wise to apply not more than 300 mg. hours and await its effect for a period of three or more months. The same rules apply to the control of the menorrhagias of adolescence and throughout the period of sexual maturity. With such a procedure there is little likelihood of permanently suspending the menses, though they may be long delayed. As a rule, the return of the menstrual flux will not be excessive.

Faultless irradiation technic and exact dosage are required to produce temporary sterilization without producing permanent amenorrhea and sterilization on the one hand or failure to arrest the menstrual periods on the other. Only radiologists who have mastered irradiation technic and who possess the equipment to measure accurately the dosage should undertake the delicate task. With the return of the menses after a variable period of amenorrhea, there will be a limited number of cases in which the pain will recur. In my own experience the proportion of such recurrences has not been large. In event of recurrence of intolerable pain it may be necessary to effect permanent sterilization by further irradiation. Happily, such cases are exceedingly rare. As a rule, the returning menstrual periods will be without undue pain and in event of subsequent pregnancy there need be no fear of abnormal offspring as a result of injury to the ovum by irradiation in the preconception period.

Radiation therapy in the child-bearing age should not be employed for the purpose of producing permanent sterilization. While it may be claimed for ray therapy that it is a harmless, painless and sure means of sterilization, the consequences incident to resultant follicular degeneration in the ovaries definitely proscribe the procedure.

Uterine hemorrhage of the adolescent period is a most perplexing problem. In the absence of pathologic changes in the pelvis to account for the loss of blood, the explanation of endocrine dysfunction is accepted. Hemorrhages may persist over an indefinite period, resisting all hygienic and medicinal measures and bringing the individual to a state of extreme anemia. Curettage usually affords but temporary respite from the hemorrhages. Happily, such recalcitrant cases are rare and it is here that radium may be applied with the results that are for the most part satisfactory.

Before radium is applied, all possible measures must have been tried and found wanting. An exploratory curettage with microscopic examination of the scrapings is an essential preliminary measure. By this process, a hyperplastic overgrowth of the endometrium is often discovered, but experience has taught that curettage alone will at best afford only temporary relief. Blood counts and repeated tests of metabolic rates should be taken before applying radium in the hemorrhages of the adolescent period.

With the intra-uterine application of from 200 to 700 mg. hours the patients in approximately half of all such cases will immediately or soon after resume normal menstrual periods. Before establishing normal periodicity, there may be an interim of months and as many as four years of amenorrhea. Ordinarily this period of amenorrhea does not persist more than six months. But it must be borne in mind that there is always the danger of producing permanent amenorrhea even in the most skilled hands.

It is contended that sterility and oligomenorrhea may be relieved by moderate irradiation of the ovaries; that hypofunction of the sex organs and mild infantilism may be corrected by stimulating the maturation of the ovum and corpus luteum. Such irradiation should not exceed 35 per cent of the skin unit dose. To overstep the prescribed dosage might lead to excessive bleeding or to temporary or permanent sterilization. For my part I am unwilling to hazard the chance in this class of cases.

The researches of Seitz have revealed the different degrees of ray influence on the ovaries and have emphasized the need of exact dosage and perfect ray technic in producing the desired results. There appears to be a wide latitude between the ray intensities which produce lasting sterilization and those which result in complete castration. While troublesome phenomena of deficiency usually accompany sterilization, this does not imply complete castration, the result of the complete loss of ovarian function. Seitz does not admit that a full carcinoma dose applied to the ovaries will produce complete castration in young women. But the limit between the dosage required for temporary sterilization and that effecting permanent sterilization is a very narrow one; hence the uncertainty of attempting to suspend the menstrual functions for a limited time. As the younger the person, the greater is the number of follicles, it follows that in early age the dosage should be of greater intensity than would be required to obtain a like result in later life. Stacy and Mussey administered 150 mg. hours of radium in a young girl suffering from hemorrhages and produced amenorrhea lasting three years.

It is conceded that it is desirable to preserve the functions of the ovaries in the child-bearing age; this is true quite apart from the consideration of future child-bearing. But the age limit that determines the choice in favor of irradiation rather than surgery is by no means uniformly agreed on. Most authorities place this age limit at 40 (Brum, Franz). Halban would place the age limit above 40 in women of nervous temperament because phenomena of deficiency are more in evidence in such types than in women of more stable temperaments. These deficiency phenomena embrace headaches, hot flashes, vertigo, insomnia, mental depression and irritability, sweating, tinnitus, hypertension, adiposity and depressive psychoses with suicidal intent.

Credit is accorded the Freiberg clinic for the introduction of a safe and efficient method of intensive irradiation by the use of the 3 mm. aluminum filter in roentgenotherapy. It is now possible to induce lasting amenorrhea in patients with uterine fibroids without endangering the skin, in approximately 100 per cent of cases. By the further use of harder filtration, additional protection to the skin is afforded with the happy result that intensive irradiation has become a safe and efficient method of dealing with most fibroids and with all metropathies. Furthermore, this improved technic has greatly shortened the period of treatment, for while formerly it required weeks and months to effect relief it is now often possible to obtain lasting results from a single sitting. In dealing with fibroids it is well to bear in mind that there are two different types of change due to radiation: those affecting the tumor itself and those which affect the ovary. Seitz and Wintz have the credit for the elucidation of the effects of the ray on the ovary. They show that follicular development may be inhibited by moderate irradiation and completely destroyed by intensive irradiation, that following inhibition of follicular development corpora lutea fail to develop and menstruation is stopped either permanently or temporarily. Such changes materially effect the growth of fibroids, which are in a measure dependent on the ovarian secretion.

There is also the direct effect of the ray on the tumor. This, together with the indirect effect on the tumor produced by the inhibitory effects of the rays on the ovaries, accounts for the decrease in size of the tumor and the alleviation of hemorrhage and pressure. Approximately one third of all fibroid tumors are suitable for irradiation. It must be borne in mind that irradiation sufficient to control the hemorrhages from fibroid tumors and to effect reduction in the size of these tumors will almost inevitably result in the permanent loss of ovarian function. Radiotherapy does not wholly remove the cause of the disturbance and hence does not fully measure up to therapeutic principles, but it does relieve symptoms indirectly by inhibiting the functions of the ovaries. The rationale of radiation therapy is based further on the hypothesis that the tumor is trophically dependent on the functioning ovaries. By destroying the follicular apparatus, hemorrhages cease and the tumor retrogresses.

The generally adopted rule to limit irradiation to fibroid tumors no larger than a three months pregnant uterus is subject to revision. In my personal experience, unexpected and gratifying results have been obtained in much larger tumors where surgery would have been invoked but for contraindicating conditions. For reasons unknown, not only is hemorrhage controlled, but in most instances pressure symptoms are more or less relieved without noticeable diminution in size of the growth.

It may be asked whether hysterectomy, with the ovaries left intact, tends to create phenomena of deficiency to as great a degree as would irradiation therapy in which the functions of the ovaries are destroyed. Opinions are widely divergent. The preponderance of evidence favors the view that irradiation is followed by a greater degree of deficiency phenomena than is hysterectomy with the ovaries left intact. The younger the woman, the greater the deficiency phenomena. Döderlein says that young women who have been irradiated often complain more of these phenomena of deficiency than they did from the loss of blood. In this I cannot concur.

Through correct irradiation technic it is possible to obtain therapeutic results in practically 100 per cent of metropathies and in selected cases of fibroids. Only when some definite contraindication exists should irradiation be offset by other therapeutic measures. The mortality of ray therapy is essentially nil, if due regard is paid the well recognized contraindicating conditions and if perfect technic is employed. This cannot be said of surgery. In irradiation therapy the possible loss of ovarian function and the consequent phenomena of deficiency must be reckoned with. And thus it comes

to pass that the age of the patient, above all other considerations, is the determining factor in the choice between ray therapy and surgery. It is self-evident that in the period of sexual maturity surgery should be preferred to irradiation unless contraindicated by conditions that render operative intervention hazardous. It is obvious that there are no such contraindications for radiation therapy in the approaching climacterium. In small and medium size fibroids, found in women who are approaching the climacterium, irradiation is the procedure to be preferred just as truly as surgery, and surgery alone, is the method of choice in the earlier years.

It was formerly believed that high grade anemia constituted a definite contraindication to irradiation, but improved technic and added clinical experience has disproved this. In this connection it is well to observe that extremely anemic patients should be safeguarded as far as possible against the possible occurrence of severe hemorrhages following on irradiation. As a precautionary measure the treatment should be instituted as far removed from the following menstrual period as possible. The shorter the interval between irradiation and the menstrual period, the greater the liability to excessive loss of blood. It would be well to have such patients under hospital supervision in anticipation of possible excessive loss of blood. In event of excessive loss of blood, hemorrhage may be controlled by tamponade and the administration of solution of pituitary and ergot. Assuming that proper technic has been employed, one may be reasonably assured that there will be no further hemorrhages, but moderate loss of blood may persist for a variable period.

CONCLUSIONS

1. Preconception therapeutic pelvic irradiation has no known effect on the development of future offspring.

2. Postconception therapeutic pelvic irradiation is fraught with grave danger to the growing fetus. So real is the danger as to justify the interruption of pregnancy when an unsuspected pregnancy has been exposed to prolonged and repeated irradiation. There is no evidence that diagnostic irradiation will produce ill effects in the growing ovum.

3. An exploratory curettage should precede pelvic irradiation, first to safeguard against the possible dangers of irradiating a pregnant uterus and secondly to determine the possible presence of cancer.

4. The younger the ovum and the greater the intensity of rays applied, the greater the injury to the fetus.

5. Pelvic irradiation as a means of inducing therapeutic abortion is not dependable and should not be attempted.

6. Temporary ray sterilization is a possibility but always an uncertainty. Expert radiologists and experienced gynecologists should confer before attempting such a procedure.

7. Excessive loss of blood and intolerable menstrual pain may be suspended for a variable time and as a rule will not recur after the menstrual periods are resumed. It is best to proceed cautiously by administering a moderate dose which can be repeated later if necessary. Faultless ray technic and exact dosage are required to produce temporary sterilization without producing permanent amenorrhea and sterilization on the one hand or failure to arrest the menstrual periods on the other. The initial dosage should not exceed 300 mg. hours.

8. In fibroids of the uterus of a child-bearing woman, surgery is preferred to irradiation.

Aquila Court.

ABSTRACT OF DISCUSSION

DR. DOUGLAS P. MURPHY, Philadelphia: Dr. Findley has stressed the most important points concerning the effect of pelvic irradiation on the health of the subsequent child. Each of these points cannot be emphasized too often, in view of the possibly great harm that may occur to a child should it receive a large amount of irradiation while in utero. Three of these should receive especial emphasis: (1) that ovarian irradiation prior to conception is harmless, as far as the health and development of subsequent children is concerned; (2) that irradiation of a growing embryo in utero, if large amounts of exposure are employed, is likely to result in the birth of a defective child, and (3) that so far there is no evidence to prove that diagnostic irradiation during pregnancy is harmful. Reports have been collected concerning fourteen patients who became pregnant between treatments in a series of roentgen exposures. The amenorrhea was at first believed to be due to the irradiation but was later found to be due to conception. Several of the children born of these mothers were defective. Such a finding indicates the importance of warning patients against the danger of becoming pregnant while any series of pelvic roentgen exposures are being given. In view of our present knowledge on the whole subject of pelvic irradiation and the health of the subsequent child the following suggestions might not be out of place: Always curet before proceeding with pelvic irradiation. Be on guard against the patient becoming pregnant between irradiation treatments. When a pregnant woman becomes irradiated unwittingly, interrupt the pregnancy at the earliest possible moment. If a pregnant woman requires pelvic irradiation, always consider the possibility of irradiation damage to the child, and take such steps as will prevent the birth of defective offspring.

ADMINISTRATION OF THIONIN AND METHYL VIOLET IN INTESTINAL BRUCELLA INFECTION *

HUGH R. LEAVELL, M.D.
MARY A. POSTON
AND
HAROLD L. AMOSS, M.D.
BALTIMORE

The notably unsatisfactory state of our knowledge of the treatment of undulant fever makes any contribution that seems at all hopeful worthy of further consideration. It is with this in mind that our present method of treating cases is presented, in the hope that it may be tried in resistant cases elsewhere.

The description by Amoss and Poston [1] of a method for isolating *Brucella* from the stools has made it possible to follow the results of treatment. Several of our cases have persistently shown *Brucella abortus* in the stools for long periods and after cultures from the blood and other body fluids had become negative. This has been true even when the blood serum showed a low agglutinin titer for *Brucella abortus,* and consequently the stool culture in these cases was the only method by which a positive diagnosis could be made.

Huddleson [2] described the use of methyl violet and thionin as differential bacteriostatic agents in deter-

* From the Biological Division of the Medical Clinic of the Johns Hopkins University School of Medicine and Hospital.

1. Amoss, H. L., and Poston, Mary A.: Isolation of the Brucella Organism from the Stools, J. A. M. A. **93**: 170-171 (July 20) 1929.

2. Huddleson, I. F.: The Differentiation of the Species of the Genus Brucella, Technical Bulletin 100, Michigan State College Agricultural Experiment Station, August, 1929.

mining the species of unknown strains of *Brucella*. He found that in vitro the porcine variety was susceptible to methyl violet in dilutions of 1 : 100,000, and the bovine type to thionin in dilutions of 1 : 50,000.

Brucella abortus cultivated from the stools of our patients were tested against these dyes, liver infusion agar p_H 6.6 being used, as described by Huddleson. Complete bacteriostasis was not secured by the concentrations he employed, but methyl violet in 1 : 50,000 dilution and thionine in 1 : 25,000 dilution inhibited the growth of porcine and bovine strains, respectively, in most instances. The dye to which the patient's organisms were most susceptible was thus determined.

The toxicity of these dyes was found by animal experiment to be low when given orally. Rabbits weighing 2 Kg. were given 25 mg. of thionin and 50 mg. of methyl violet orally without ill effects. Larger doses were not tried. However, when given intravenously, from 5 to 10 mg. of either dye produced severe convulsions.

The specific dye was administered to patients in the form of pills coated with phenyl salicylate, from 25 to 200 mg. being given in the course of twenty-four hours. At the same time, a retention enema of 300 cc. of from 1 : 25,000 to 1 : 100,000 of the dye was given daily following a soapsuds enema. The dyes were given for approximately a week at a time, and, during periods between courses of dye, cultures were made of the stools daily. Slight constipation was the only symptom that could possibly be attributed to the use of the dyes.

Dye was administered to three patients showing a persistence of *Brucella* in the stools. The results are recorded in the brief abstracts of the patients' histories.

REPORT OF CASES

CASE 1.—A man, aged 40, a veterinarian, contracted a laboratory infection with a porcine strain of *Brucella abortus* in February, 1928. At that time he felt run down and had joint pains and fever with profuse sweats. The bowels became constipated and he noted some burning on urination. A month after the onset of symptoms a blood culture was made and *Brucella abortus* found; the blood serum had an agglutinin titer of 1 : 160 for *Brucella abortus*. In May, 1928, he had epididymitis. Seventeen years before he had had a gonorrheal infection, and seven years before bilateral traumatic epididymitis.

During the succeeding two weeks he received two intravenous injections of mercurochrome-220 soluble in doses of 180 and 250 mg., respectively, as suggested by Balfour [3] and used by Gage and Gregory [4] and others with improvement. He had violent reactions following the mercurochrome, and although his temperature became lower, a blood culture taken after the injections still showed *Brucella abortus*. General improvement was such as to permit him to return to work, but on account of weakness and return of fever he soon had to give it up.

He was admitted to Johns Hopkins Hospital, April 26, 1929, complaining of recurrence of weakness, pains in the sacral region, and undue fatigue, even from talking. Examination revealed that the patient was in a good state of nutrition. The lymph nodes were not enlarged; the liver and spleen were not palpable. The left epididymis was larger than normal and quite firm. The prostate was diffusely enlarged, uniformly moderately indurated, and slightly tender. A blood count showed: hemoglobin, 85 per cent (Sahli); red blood cells, 4,280,000; white blood cells, 4,400; polymorphonuclears, 57 per cent; lymphocytes, 37 per cent; transitionals, 6 per cent. The urine was entirely normal. A blood Wassermann test was negative. Cultures of the blood and urine were negative, but the agglutinin titer of the blood for *Brucella abortus* had risen to 1 : 640. Cultures of the stools were made for *Brucella abortus* and typical organisms of the porcine type were recovered. Ten of the twelve stools from which cultures were made between April and October, 1929, showed *Brucella abortus*. Cultures of the seminal fluid and duodenal contents were negative.

The patient was somewhat improved after a course of autogenous *Brucella* vaccine, and following the removal of the left epididymis, June 10, 1929, as a possible focus of infection. Cultures of the epididymis made at operation showed no growth.

Weakness and fever persisted, and in November, 1929, *Brucella abortus* was still present in his stools. He was therefore given methyl violet. The dosage is given in Table 1.

TABLE 1.—*Amount of Methyl Violet, Time and Method of Administering, in Case 1*

	Orally	By Enema
Nov. 10-13	25 mg. daily	300 cc. 1 : 100,000 daily
Nov. 17-25	50 mg. daily	300 cc. 1 : 100,000 daily
Dec. 1-7	50 mg. daily	300 cc. 1 : 50,000 daily
Dec. 16-21	50 mg. daily	300 cc. 1 : 50,000 daily
Jan. 4-11	50 mg. daily	300 cc. 1 : 50,000 daily
Jan. 21-26	100 mg. daily	300 cc. 1 : 50,000 daily

Cultures made from twenty stools during the period of dye treatment showed no *Brucella abortus*. When the patient was discharged, Jan. 26, 1930, his strength had increased so that he was able to take walks about the hospital. His temperature was normal and the general improvement was striking.

When seen, May 16, 1930, he was able to drive his car 100 miles without undue fatigue, and except for slight pain in the lumbar region had no complaints. Cultures made from four stools at intervals from his discharge to the time of his last visit were negative for *Brucella*.

CASE 2.—A boy, aged 18, apparently contracted undulant fever in a slaughterhouse where he was employed to strip mucosa from pigs' intestines. He came to Johns Hopkins Hospital, Oct. 10, 1929, after three weeks of illness that was characterized by fever, weakness, marked fatigue and loss of weight.

On admission his temperature was 99.4, and subsequently his temperature curve was of a typically undulating type. He looked acutely ill but was in no great discomfort. The superficial lymph nodes were enlarged. The pulse was dicrotic, and a soft systolic murmur was audible over the apex of the heart. The liver and spleen were both readily palpable. No rose spots or petechiae could be found. The lungs were clear.

A blood counted showed: hemoglobin, 74 per cent (Sahli); red blood cells, 3,920,000; white blood cells, 6,400; polymorphonuclears, 72 per cent; lymphocytes, 26 per cent; transitionals, 2 per cent. Urine was normal except for a transient albuminuria. A blood Wassermann test was negative; the blood Widal was also negative. A porcine strain of *Brucella abortus* was recovered from the blood on five different occasions. Agglutination for *Brucella abortus* was negative on admission, but two days later was positive in dilutions up to 1 : 160. The titer later rose to 1 : 5,120. Agglutination occurred with only the porcine antigen, though nine other strains of *Brucella* were tried.

Brucella was first found in the stools on the forty-first day of disease, and subsequently twenty-eight stools were positive for *Brucella*, the last one on the one hundred and twenty-eighth day.

3. Balfour: The Treatment of Undulant Fever: A Suggestion, Brit. M. J. **2**: 86 (July 11) 1925.

4. Gage, E. E., and Gregory, D. A.: Human Infection with Brucella Melitensis Variety Abortus Treated with Mercurochrome, J. A. M. A. **87**: 848-849 (Sept. 11) 1926. Carpenter, C. M., and Merriam, H. E.: Undulant Fever from Brucella Abortus, J. A. M. A. **87**: 1269-1271 (Oct. 16) 1926. Ross, G. R., and Martin, A. P.: Treatment of Undulant Fever by Mercurochrome-220, J. Trop. Med. **30**: 165-171 (July 1) 1927. Todd, M. L.: Two Cases of Malta Fever Treated with Mercurochrome, Mil. Surgeon **61**: 34-35 (July) 1927.

As Izar, Hoffman and others[5] had reported beneficial results following the intravenous injection of acriflavine base, this patient was given four injections ranging from 0.1 to 0.6 Gm. at from two to three day intervals between the fifty-second and sixty-third days of disease. There was no effect on the patient's temperature or on his general condition.

On the seventy-second day, methyl violet was first given. The manner of giving and the amounts are shown in table 2.

After the second course of methyl violet, the temperature came down but began to rise after a few days, and the blood culture again showed *Brucella abortus*. However, when the third course was begun, the temperature fell again, and remained practically normal. General improvement was noted, and the patient gained weight. When discharged on the hundred and forty-first day, physical examination revealed no abnormality, and he felt able to return to work but was not allowed to do so.

Cultures were not made from the stools at the time of the patient's discharge, as he was in the middle of a three weeks' course of treatment with methyl violet. When he reported to the hospital, March 6, 1930, and on the following week, his stools showed no *Brucella abortus* on culture, and he was allowed to return to work.

CASE 3.—M. B.,[6] a woman, aged 31, a school teacher, was found to have undulant fever in November, 1928, after an illness of a year's duration during which time tuberculosis and subacute bacterial endocarditis had been suspected. *Brucella abortus* (bovine type) was found after repeated blood culture, and the blood serum agglutinated *Brucella* in dilutions through 1:2,560. The patient was first admitted to Johns Hopkins Hospital, Nov. 10, 1928, complaining of fatigue, weakness, joint pains, constipation and vague abdominal pain which was not well localized.

The temperature on admission was 99.6 F. and was rarely over 100. She looked exhausted and showed evidence of loss of weight. The pupils were dilated. The thyroid was palpable but not enlarged, and there was no thrill or bruit. No abnormal conditions were noted on examination of the heart or lungs. The liver and the spleen were not palpable, but there was some tenderness on deep pressure over both lower quadrants of the abdomen. Pelvic examination revealed no definite abnormality other than chronic endocervicitis.

A blood count showed: hemoglobin, 95 per cent (Sahli); red blood cells, 4,700,000; white blood cells, 5,700; polymorphonuclears, 71 per cent; lymphocytes, 25 per cent; transitionals, 4 per cent. Examination of the urine showed nothing abnormal. A blood Wassermann test was negative; the Widal test was also negative. Cultures were not made of the stools on her first admission, as this was prior to the elaboration of the method in use at present for the detection of *Brucella*.

TABLE 2.—*Amount of Methyl Violet, Time and Method of Administering in Case 2*

	Orally	By Enema
Dec. 13-19	50 mg. daily	300 cc. 1:50,000 daily
Dec. 31-Jan. 6	50 mg. daily	300 cc. 1:50,000 daily
Jan. 16-25	100 mg. daily	300 cc. 1:50,000 daily
Feb. 10-19	100 mg. daily	300 cc. 1:50,000 daily
Feb. 19-28	200 mg. daily	none

She improved somewhat after a course of autogenous *Brucella* vaccine, and one injection of convalescent *Brucella* serum. Dec. 21, 1928, she was discharged.

When readmitted, two months later, a thorough search for foci of infection was made without definite results. March 14, 1929, cultures of the stools were first made for *Brucella* and found positive, and on eighteen subsequent cultures *Brucella* was recovered of the same strain as that grown from the blood. Because of the vague abdominal pain and tenderness, and the insistence of the patient, an exploratory laparotomy was done, April 4, by Dr. J. D. Hart. Operation revealed tuberculous peritonitis confirmed by the finding of acid-fast organisms in stained sections of tissue, and by the production of tuberculosis in guinea-pigs inoculated with material from some of the tubercles. A cyst of the right ovary was also found, and *Brucella abortus* in pure culture was grown from the cyst and from some of the tubercles over the peritoneal surface of the cyst and the ovary on the same side.

During the summer of 1929 the patient improved greatly under the usual hygienic care and heliotherapy. When she returned to Johns Hopkins Hospital, October 4, however, she still felt weak and had a low fever, rarely over 100.5 F. Blood cultures were negative, but her blood serum agglutinated her own strain and a caprine strain in 1:640 dilution. *Brucella abortus* was found in two of six stools from which cultures were made.

As thionin proved to possess a high bacteriostatic power for her strain, the administration of this drug was begun November 8.

TABLE 3.—*Amounts of Thionin, Time and Method of Administering in Case 3*

	Orally	By Enema
Nov. 8-10	25 mg. daily	250 cc. 1:100,000 daily
Nov. 13-17	50 mg. daily	300 cc. 1:100,000 daily
Nov. 20-23	50 mg. daily	300 cc. 1:50,000 daily

All stools from which cultures have been made subsequent to these courses of dye treatment have been negative for Brucella. The last one was examined March 20, 1930. The patient has been able to resume teaching and was essentially well when seen, May 3.

COMMENT

The administration of the dyes may assist in freeing the stools from *Brucella*. Certainly no untoward symptoms arose from the use of the dyes by mouth. The method seems a logical means of combating the infection, especially in those cases which have lapsed into a chronic stage, with no foci of *Brucella* infection demonstrable elsewhere than in the intestinal tract. As in Case 3, *Brucella* may persist in the stools even after a focus found outside the gastro-intestinal tract has been removed.

Lesions have been noted in the intestine in cases of undulant fever by Hughes,[7] Bruce[8] and Bousfield,[9] while Griffin[10] has recently reported roentgen observations suggestive of intestinal ulceration. Treatment by way of the alimentary tract with dyes which more or less specifically inhibit the growth of *Brucella* seems rational. Audibert and Rouslacroix[11] administered methylene blue (methylthionin chloride-U. S. P.) in two cases with suggestively favorable results, and Rayboud[12] reported a case of laboratory infection in which he felt that the same dye shortened the course of the disease.

Methylene blue possesses little bacteriostatic power for *Brucella abortus*. It is present in 1:10,000 dilution

5. Izar, G., and Mastroeni, G.: Boll. d. Soc. ital di biol. sper. **1**: 743-745 (Nov.-Dec.) 1926; Riforma med. **43**: 100 (Jan. 31) 1927. Izar, G.: Rassegna internaz. di clin. e terap. **8**: 750-761 (Nov.) 1927. Darre, H., and Laffaille, A.: Bull. Acad. de méd., Paris **100**: 999-1003 (Oct. 16) 1928. Hoffman, A. M.: Treatment of Undulant Fever with Acriflavine, J. A. M. A. **92**: 2169-2171 (June 29) 1929.

6. This patient was referred from the clinic of Dr. L. F. Barker with a diagnosis of undulant fever. The case will be reported in detail by Drs. George P. Berry of this hospital and Harvey Brownley of Dr. Barker's clinic.

7. Hughes, L.: Mediterranean, Malta or Undulant Fever, London, The Macmillan Company, 1897, p. 169.

8. Bruce, D.: Practitioner **40**: 241, 1888.

9. Bousfield, L.: J. Roy. Army M. Corps **7**: 134-136 (Aug.) 1906.

10. Griffin, W. A.: New England J. Med. **202**: 324-328 (Feb. 13) 1930.

11. Audibert and Rouslacroix: Treatment of Malta Fever by Methylene Blue, Presse méd. **19**: 9 (Jan. 7) 1911.

12. Rayboud, M.: Laboratory Infection with M. Melitensis: Cure by Methylene Blue, Marseille méd. **49**: 1923 (Dec. 8) 1911.

in the eosin-methylene blue plates on which *Brucella* grows easily in our routine stool cultures. Hence there seems to be no particular basis for its use therapeutically.

Clinical Notes, Suggestions and New Instruments

PELLAGRA-LIKE SKIN LESIONS DUE TO THE KETOGENIC DIET *

ALVIS E. GREER, M.D., HOUSTON, TEXAS

It is my belief that the following case report constitutes an illustration of one of the dangers in the use of the ketogenic diet in the treatment of idiopathic epilepsy:

REPORT OF CASE

Mrs. H. E. R., an American, aged 33, 5 feet 4 inches (163 cm.) tall, weighing 112 pounds (50.8 Kg.), came to the clinic complaining of attacks of convulsions, lasting from fifteen to twenty minutes, followed by stupor. She cried easily and was nervous and excitable; her memory was poor and she was not able to concentrate. The attacks of convulsions had begun four years before, appearing three weeks after the birth of a child. Following the first convulsion she had been unconscious for six hours. She had had these attacks frequently, having as many as two or three a day, until she became pregnant again a little more than two years before; during this pregnancy she had had two mild convulsive attacks. Following the birth of her child, she continued to have convulsions. She menstruated irregularly, every four to six weeks, for a period of five days; the flow was normal and she had little pain. She had had two children, aged 4 years and 20 months, respectively, and no miscarriages. The family history contained nothing of any moment.

The patient was thin, nervous and apprehensive, with a considerable acneform eruption about the face, and a scar on the upper lip, which she said had resulted from biting her lip during a convulsion. The isthmus of the thyroid gland was palpable. The teeth were in good condition but were quite irregular. The abdomen showed a tendency toward habitus enteroptoticus. There was slight tenderness to percussion over both lumbar regions. The reflexes were normally active and present, and the sensation was normal.

The urinalysis showed a faint trace of albumin. The blood examination, including the blood Wassermann reaction, was negative. A roentgenogram of the skull did not reveal any abnormality.

The patient entered the Baptist Hospital, July 17, 1929, was placed on a ketogenic diet, and was discharged from the hospital in three weeks; at that time she was receiving 36 Gm. of protein, 36 Gm. of carbohydrate and 238 Gm. of fat a day, composed of oatmeal, cream, butter, mayonnaise, 5 per cent vegetables, 10 per cent fruits, and bacon, and because of the low protein allowance a small amount of eggs, fish and chicken. From this time the urine constantly contained acetone, and the patient improved markedly. While in the hospital, and subsequently, she received 1½ grains (0.1 Gm.) of phenobarbital at bedtime, and 15 grains (1 Gm.) of sodium bromide each morning before breakfast, which was considerably less phenobarbital and bromide than she had taken for many months before entering the hospital. October 25, there was noticed a dusky red eruption on the dorsum of the hands and thumbs, about the wrists, on the anterior portions of the elbows, on the anterior portion of the right thigh, and on the lateral, lower cervical regions bilaterally. The skin was thickened, fissured and red; no itching was present, but there was some smarting. The tip of the tongue was quite red. The vaginal and rectal mucous membranes were normal. The patient had not menstruated for nine weeks. She was kept on the same dietary regimen, and the urine continued to be strongly positive for acetone. December 3, the eruption was still markedly present, and at this time 4 Gm. (1 drachm) of a brewers' yeast preparation was given three times each day, the same diet being continued. After the yeast had been taken two weeks, the eruption had practically disappeared.

*From the Greer-Park Clinic.

SUMMARY OF THE LITERATURE

The use of a ketogenic diet in the treatment of idiopathic epilepsy has been increasingly prevalent since its introduction by Wilder [1] and by Peterman.[2] It had been previously shown by Guelpa and Marie [3] and by Geyelin [4] that fasting would often cause a cessation of the convulsions of idiopathic epilepsy. Peterman thought that the diet was effective because of the action of the ketone bodies formed in the tissues, while other observers [5] were of the opinion that its value was dependent on the correction of an abnormal tendency toward a spontaneous development of alkalosis at the time of an epileptic convulsion. McQuarrie [6] believes that the dehydrating effect of this dietary method is the primary factor in favoring the control of the convulsions. It is extremely important that the diet should be adequate, and every precaution should be taken to insure the diet having a sufficient total energy value and a proper content of protein, vitamin, mineral elements and other constituents necessary to promote normal growth and development. McQuarrie states that the protein allowance now being rather widely used of 1 Gm. per kilogram of body weight is far too small for patients on strongly ketogenic diets, and, furthermore, that as from 0.5 to ⅓ Gm. of carbohydrate per kilogram of body weight is ordinarily given, from 1.75 to 2 Gm. of protein is probably necessary. It appears that the ketosis increases the protein requirement considerably, that the abnormal hydration of the tissues resulting from partial protein starvation has a tendency to defeat the dietary regimen, and that the converse is true that the dehydration of the tissues favors a state of ketosis. Bing and Mendel [7] have demonstrated that for the normal growth and nutrition of the albino mouse it is necessary for the mouse to have both the vitamin B and the vitamin B_2 in its diet. They observed lesions, which they termed pellagra-like, in mice on a diet devoid of vitamin B_2. Akroyd and Roscoe [8] have proved that the vitamin B_2 content is deficient in whole wheat, oatmeal, "household" flour, grits, dried peas and cereal products, whereas it is richly present in milk, meat and yeast. They have also proved that the appearance time of dermatitis in rats fed on a diet deficient in vitamin B_2 is approximately ten weeks.

Goldberger,[9] in his epoch-making work on pellagra, concluded that pellagra is due to a deficiency in protein, and he stated that increasing supplies of milk and fresh meat were associated with a decreasing incidence of pellagra. He later said that dried yeast is strongly preventive of pellagra.

COMMENT

Peterman has suggested that the protein should not exceed 1 Gm. of protein per kilogram of body weight, and I gave my patient slightly less than 0.8 Gm. of protein per kilogram of body weight. Undoubtedly, a diet containing 60 Gm. of protein and 25 Gm. of carbohydrate would have been better. It had seemed necessary to reduce the protein to 38 Gm. and the carbohydrate to 38 Gm. to maintain an adequate degree of ketosis. It is my belief that this pellagra-like skin eruption, relieved so promptly by brewers' yeast, which contains vitamin B_2 in abundance, was due to a vitamin B_2 deficiency, caused by the low protein allowance used.

3717 Main Street.

1. Wilder, R. M.: Bull. Mayo Clinic **2**: 307, 1921.
2. Peterman, M. G.: The Ketogenic Diet in the Treatment of Epilepsy, Am. J. Dis. Child. **28**: 28 (July) 1924.
3. Guelpa, G., and Marie, A.: Bull. gén. de thérap. **160**: 616, 1910.
4. Geyelin, H. R.: M. Rec. **99**: 1037, 1921.
5. Lennox, W. G., and Cobb, Stanley: Medicine **7**: 105 (May) 1928.
6. McQuarrie, Irvine: J. Nutrition **2**: 31 (Sept.) 1929.
7. Bing, F. C., and Mendel, L. B.: J. Nutrition **2**: 49 (Sept.) 1929.
8. Akroyd, W. R., and Roscoe, Margaret H.: Biochem. J. **23**: 483, 1929.
9. Goldberger, Joseph; and Tanner, W. F.: Pub. Health Rep. **40**: 54 (Jan. 9) 1925; Goldberger, Joseph; Wheeler, G. A., and Sydenstricker, E.: Ibid. **35**: 648 (March 19) 1920.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION APPROVES THE FOLLOWING REPORT.

ULTRAVIOLET TRANSMITTING GLASSES

SPECIFICATION OF MINIMUM TRANSMISSION

W. W. COBLENTZ, PH.D., SC.D.
WASHINGTON, D. C.

I. SPECTRAL RANGE OF THERAPEUTIC VALUE

Practically all the discussion of the need of special window glasses for transmitting the short wavelength ultraviolet solar radiation for healing purposes is based on the observation [1] that rickets develops when common window glass is used in solariums and sun boxes, whereas healing is effected when glasses are used that freely transmit the short wavelength ultraviolet rays that are shut out by common window glass. By extrapolation, based on some biologic evidence, it is assumed that since these rays cure rickets they are useful also for general healing purposes.

Physical tests show that common window glass transmits only 1 to 2 per cent at 313 millimicrons and is completely opaque to radiation of shorter wavelengths, which, in average sea level sunlight, extend to about 295 millimicrons in summer and to about 305 millimicrons in winter.

The therapeutic range of the ultraviolet in average noonday sea level sunlight is therefore only 10 to 15 millimicrons in width.

Using the intense emission lines of the quartz mercury arc lamp, biologic tests [2] of the activation of ergosterol (subsequently fed to rachitic animals) and of the direct action of ultraviolet rays on rachitic animals show that the maximum therapeutic effect is produced by wavelengths at 297 to 302 millimicrons; and only a weak if any effect is obtained with the wavelength 313 millimicrons or longer wavelengths. No authoritative evidence appears to be at hand showing that ultraviolet wavelengths at 320 to 365 millimicrons have a special therapeutic value. In this connection it is irrelevant as to whether or not the longer ultraviolet solar rays have any beneficial effect on plants.

The shortest wavelengths in sunlight appear to produce the greatest biologic action, and the tests cited with common window glasses show that solar wavelengths longer than 313 millimicrons have no specific biologic action. This evidence in connection with the foregoing citations indicates that the therapeutic efficiency of a window glass can be defined in terms of its transparency at 302 millimicrons.

II. SPECIFICATION OF THE MINIMUM TRANSMISSION OF WINDOW GLASS

All window glasses decrease rapidly, and uniformly (i. e., without indentations), in transmission in the ultraviolet spectrum, of wavelengths shorter than 365 millimicrons. The only difference is that, in the special window glasses, the absorption band is shifted toward the shorter wavelengths. A variation of 0.1 mm. in the thickness of the glass changes the transmission by 1.2 per cent at 302 millimicrons, which shows the importance of using glasses of uniform thickness.

When the special window glasses for transmitting short wavelength ultraviolet were first introduced, it was evident that the time would come when it would be necessary to establish some criterion to distinguish them from common window glasses.

This was attempted in Bureau of Standards circular 235 (second revision) of Sept. 29, 1927, in which a transmission of 2 per cent at 280 millimicrons was specified, in order to insure sufficient transparency at 297 to 302 millimicrons, useful for therapeutic purposes, and to distinguish these special glasses from common window glass. Thereupon purveyors of window glasses made the plea that, since wavelengths shorter than 290 millimicrons are not present in sunlight, the specification of transparency should be made only in terms of wavelengths that are in sunlight.

Since common window glass transmits wavelengths longer than 313 millimicrons, evidently there is no reason for considering the transparency of special window glasses at wavelengths longer than this value. Hence, after examining a large number of samples of special window glasses, of different makes, I adopted the wavelength 302 millimicrons (an intense, easily obtainable emission line in the mercury arc, used as a source) as a basis for comparing the ultraviolet transparency of special window glasses.

The use of this wavelength and the method of accelerated stabilization of the transmission of these special glasses have been adopted by a number of manufacturers of window glasses and by the national standardization laboratories of several foreign countries.

The next question is the specification of the percentage of transmission at 302 millimicrons in order to insure effective therapeutic action. In this connection, speaking from personal experience with ultraviolet radiation sources, it is to be emphasized that the attending physician, and the parents of a sick child, cannot afford to run the risk of using a glass of doubtful effectiveness in transmitting ultraviolet radiation. What is needed is the best available, and the best is none too effective in the winter time when it is most needed.

Hence, in my summaries [3] of this question I have specified that, until experiments demonstrate that a lower transmission will produce an effective biologic action, a fair and reasonable requirement is that the substitute for ordinary window glass, after complete solarization, shall have a transmission of not less than 25 per cent of the incident radiation at wavelength of 302 millimicrons. In fact, in a recent communication I [4] have raised the question whether a minimum transmission of 25 per cent is sufficiently high, in view of the fact that a value of 45 to 50 per cent would be more nearly in agreement with physiologic observations. In this connection it is interesting to note that recent improvements in the most widely used special window glasses will permit a specification of a minimum transmission of 35 per cent at 302 millimicrons.

This specification of a minimum transmission is based on the following data: (1) of Tisdall and Brown,[5] and of Eddy,[6] who showed the necessity of using the direct rays in a solarium for effective biologic

1. Bethke and Kennard: Poultry Science **6**: 290, 1927.
2. Hess and Weinstock: Proc. Soc. Exper. Biol. & Med. **24**: 759, 1927. Sonne, C., and Reckling, E.: Hospitalstid. **70**: 399 (April 28) 1927. Maughan, G. H.: Am. J. Physiol. **87**: 381 (Dec.) 1928.
3. Coblentz, W. W.: Tr. Illum. Engin. **23**: 247, 1928; Tr. Nat. Tuberc. A., 1928. Coblentz and Stair: Tr. Illum. Engin. Soc. **23**: 1121, 1928.
4. Coblentz, W. W.: Tr. Illum. Engin. Soc. **25**: 367, 1930.
5. Tisdall, F. F., and Brown, Alan: Antirachitic Value of the Sun's Rays Through Various Special Window Glasses, Am. J. Dis. Child. **34**: 742 (Nov.) 1927.
6. Eddy: Science **68**: 12 (Oct. 19) 1928.

results; (2) of Clark [7] (and more recently by me), who showed that two minutes' exposure to direct sunlight is better than some fifteen to twenty hours at a distance of 5 meters (16 feet) from a north window of a schoolroom; (3) of Caldwell and Dennett,[8] who found that sunbaths of two to three hours daily, throughout the winter, could be given to children as a preventive measure, but they do not advocate this as a substitute for ultraviolet lamp irradiation in the cure of disease; (4) of Wyman,[9] who found that only glasses having a high transmission (Corex, fused quartz) admitted sufficient ultraviolet solar radiation for the rapid improvement of rickets in children in Boston during the winter time; (5) of tests on a special window glass used in front of a carbon arc lamp, in which I found that, after the glass had decreased to 20 per cent of transmission, the patients who were being irradiated by this lamp no longer reacted effectively to the light treatment; and (6) the tests reported by the Council of Physical Therapy [10] of the American Medical Association, which show that material transmitting 5 per cent at 302 millimicrons gave no protection from rickets, and that only those glasses which had a transmission of 30 per cent or higher, at 302 millimicrons, gave an appreciable protection against rickets—but this protection was not 100 per cent. The ultraviolet lamp radiation gave 100 per cent protection.

There are many factors that affect the amount of ultraviolet in sunlight, such as altitude, latitude, time of day, season of the year, and especially atmospheric pollution by smoke. In view of this situation it appears desirable to use the most transparent glass that money can buy, especially in sanatoriums and permanent sun parlors. For domestic use, with children in the home, where such windows will be needed only a few years, glass substitutes having a high transmission of ultraviolet radiation can be installed and replaced yearly at a small expense.

REPORTS OF THE COUNCIL

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS ADOPTED THE FOLLOWING REPORT.

MALTESE X-RAY LEAD GLASS ACCEPTABLE

Maltese X-Ray Lead Glass, submitted by Semon Bache & Company, New York, is a lead glass designed for x-ray protective shields.

Measurements of the protective qualities of several samples of this glass were made by the Bureau of Standards. The data obtained are recorded in the following table. The protective coefficient given in the last column is the ratio of the lead equivalent thickness to the thickness of the sample.

Sample Identification	Density, Gm./Cm.³	Thickness, (Mm.)	Lead Equivalent Thickness in Mm.	Protective Coefficient
A1	4.32	5.70	1.61	0.28
A2	4.31	5.72	1.59	0.28
A3	4.39	5.72	1.64	0.29
A4	4.31	5.68	1.59	0.28

The Council on Physical Therapy declares Maltese X-Ray Lead Glass acceptable for inclusion in the list of accepted medical apparatus.

7. Clark: Science **68**: 165 (Aug. 17) 1928.
8. Caldwell, G. W., and Dennett, R. H.: The Clinical Value of Sunlight Through Ultraviolet Transmitting Glass, J. A. M. A. **92**: 2088 (June 22) 1929.
9. Wyman, E. T.: Boston M. & S. J. **197**: 376 (Sept. 8) 1927.
10. Report on Window Glass Substitutes, J. A. M. A. **88**: 1562 (May 14) 1927.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary.

TUBERCULIN-KOCH (See New and Nonofficial Remedies, 1930, p. 358).

Eli Lilly & Company, Indianapolis.

Old Tuberculin, Human Strain, Concentrated (See New and Nonofficial Remedies, 1930, p. 360).—Also marketed in packages of two vials, one containing a stated amount of tuberculin and the other sufficient diluent to make 1 cc. as follows: Dilution A, containing 0.1 cc.; Dilution B, containing 0.01 cc.; Dilution C, containing 0.001 cc.; Dilution D, containing 0.0001 cc.; Dilution E, containing 0.00001 cc.; and Dilution F, containing 0.000001 cc.

CHINIOFON (See New and Nonofficial Remedies, 1930, p. 120).

Chiniofon-Searle.—A brand of chiniofon-N. N. R.

Manufactured by G. D. Searle & Co., Inc., Chicago. No U. S. patent or trademark.

Tablets Chiniofon-Searle, 0.25 Gm. (4 gr.).

COMMITTEE ON FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COMMITTEE ON FOODS OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

KIDDIE KANNED VEGETABLES, FRUITS AND CEREALS

Manufacturer.—Kiddie Kanned Foods, Inc., Seattle, Wash.

Description.—Canned, cooked and sieved vegetable soup, oat porridge, wheat porridge, spinach, tomatoes, carrots, apples and peaches. They contain no added salt or sugar.

Preparation.—Vegetables and fruits: The products are collected fresh from Puget Sound gardens, selected, washed four to six times, and cooked under 10 to 15 pounds pressure for three to eight minutes to soften for sieving. They are immediately sieved through aluminum cone-shaped sieves with the aid of wooden rolls operated by hand. The sieving is accomplished with minimum manipulation and exposure to the air, the foods meanwhile being kept at a boiling temperature.

The hot sieved foods are packed in cans, sealed at once and processed at 15 pounds steam pressure, the vegetables for thirty to fifty minutes, the fruit for five to ten minutes.

Cereals: Crushed oats and wheat are cooked at 15 pounds pressure for thirty minutes, sieved, packed hot, and processed at 15 pounds steam pressure for seventy minutes.

Composition.—The composition is essentially that of the natural products subsequent to dilution with some water and cooking.

Claims of Manufacturer.—The products are prepared especially for infants and invalids. They are easily digested by persons with impaired digestive systems.

HORLICK'S MALTED MILK LUNCH TABLETS (PLAIN AND CHOCOLATE FLAVORED)

Manufacturer.—Horlick's Malted Milk Corporation, Racine, Wis.

Description.—Horlick's Malted Milk, plain and chocolate flavored, compressed into tablets.

Manufacture.—Horlick's Malted Milk, plain and chocolate flavored, prepared as indicated in the announcement for that product (THE JOURNAL, August 23, p. 595) is compressed into tablets without the addition of any other material.

Composition.—See announcement for Horlick's Malted Milk referred to under "Manufacture."

Claims of Manufacturer.—Intended for same uses as those for powdered Horlick's Malted Milk. The tablet form is for convenience.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 20, 1930

IS A MEAT DIET A MENACE?

The proper place of meat in the modern dietary is a subject that has been considerably debated for many years. The problem involves to some extent economic and geographic considerations that may deserve some recognition in circumscribed instances along with the primarily important physiologic aspects of the subject. Some vegetarians have been swayed by religious or sociological teachings in their avoidance of flesh foods. Such claims, however, can scarcely be expected to enter into the deliberations of the student of nutrition who is guided by the established observations of his science. Thousands of persons have existed without apparent detriment on a regimen in which meat finds no place. Objections to flesh foods have been raised in the past on various grounds, changing from time to time with the progress of knowledge. At one time the putrescibility of animal tissues that are eaten was stressed. This was in a decade when the vague specter of so-called autointoxication swayed many persons. Presently flesh foods began to be incriminated as containing precursors of the dreaded uric acid, a catabolite pictured as the cause of many human ills. Today the desirability of a purine-free dietary no longer seems so pressing. Liver, for example, has shifted from the category of a food product likely to yield uric acid into the group of health-promoting nutrients.

The more recent objections to meat have been directed toward the possibilities of kidney disorders attendant on a regimen rich in protein and to the genesis of arterial hypertension. The management of high blood pressure is an ever present problem in practical medicine today; hence the intense interest in all that concerns the etiology of the condition. The scanty reports available from races that are known to live almost exclusively on meat for long periods are not disheartening. A report by Thomas [1] a few years ago dealt with his examination of 142 Eskimos accustomed to an almost exclusive meat regimen. He found no elevation of blood pressure above the normal and rarely any evidence of renal disorder. There are other records [2] indicating that Eskimo and other tribes accustomed to a life of hardship and endurance fail to show indications of harm attributable to their high protein intake.

The flesh—that is, the musculature tissue of animals, which is consumed by man—is admittedly an "incomplete" food. Its poverty in vitamins and some of the inorganic nutrients, notably calcium, is conspicuous. Roughage likewise is lacking in the customary cuts of meat. The tribes or persons who are naturally adapted to a meat regimen include not only skeletal muscle but also abundance of tissue fats, bone marrow and various edible organs in their food intake. This needs to be taken into consideration in any physiologic evaluation of flesh-eating persons. An exclusive ration of lean muscle tissue is impossible because of the physical limitations of the apparatus of mastication, if for no other reason.

In a series of carefully controlled observations [3] at the Russell Sage Institute of Pathology, New York, two arctic explorers lived for a year on a diet consisting exclusively of "flesh foods"; in this were included beef, lamb, veal, pork and chicken, the parts used being the muscle, liver, kidney, brain, bone marrow, bacon and fat. The protein intake varied from 100 to 140 Gm., the fat from 200 to 300 Gm. and the carbohydrate, derived entirely from the meat, from 7 to 12 Gm., with a total fuel value between 2,000 and 3,000 calories. The carefully prepared report states that at the end of the year "the subjects were mentally alert, physically active, and showed no specific physical changes in any system of the body." The blood pressure was not raised; kidney function tests gave no indication of renal damage; vitamin deficiencies did not appear. The use of the meat diets did not decrease the efficiency of absorption from the intestinal tract. However, both men showed negative calcium balances when they were taking meat and fat alone. Perhaps the potentially acid nature of the diet contributed to the loss of calcium; in any event, even though the level of the blood calcium and phosphorus always remained normally high, the danger of calcium deficiency needs to be borne in mind. Rickets is said to be absent among the Greenland Eskimos; [1] perhaps the ingestion of small amounts of bone acts as a protective additional source of calcium.

As might be expected of a protein-fat regimen poor in carbohydrate, the subjects of the recent experiments excreted ketone substances. According to McClellan and Du Bois,[3] no symptoms were noted which would be

1. Thomas, W. A.: Health of a Carnivorous Race, J. A. M. A. **88**: 1559 (May 14) 1927.

2. Heinbecker, P.: J. Biol. Chem. **80**: 461 (Dec.) 1928.

3. McClellan, W. S., and Du Bois, E. F.: Clinical Calorimetry: XLV. Prolonged Meat Diets with a Study of Kidney Function and Ketosis, J. Biol. Chem. **87**: 651 (July) 1930. McClellan, W. S.: Rupp, V. R., and Toscani, V.: Clinical Calorimetry: XLVI. Prolonged Meat Diets with a Study of the Metabolism of Nitrogen, Calcium and Phosphorus, ibid. **87**: 669 (July) 1930.

attributed to the mild ketosis. There was no depression of mental faculties and no significant change in the carbon dioxide combining power of the blood. As far as these investigators could determine from clinical observations and special tests, injuries did not result from the prolonged mild ketosis. In fact, they failed to find any ill effects from the prolonged use of the exclusive meat diet. It is such a dietary program that is followed by many dwellers in the Far North, among them the Eskimo tribes already cited, without obvious detriment. A striking contrast is afforded by the Labrador Eskimos, who live mostly on preserved food including dried potatoes, flour, canned foods and cereals. The lesson in practical nutrition afforded by their unfortunate experiences was recently discussed in THE JOURNAL.[4] In the case of these communities the comparative absence of meat from the regimen has not proved to be a nutritive or physiologic advantage. The protein factor is not the only consideration in the search for physiologic well being.

PROTECTIVE DEVICES FOR THE HEART

There can be little doubt that during periods of stress in the body the various organs cooperate in an effective way as far as possible to avert an impending debacle. Each is sacrificed according to the extent to which it can be spared. Hence Parsons [5] remarks that an organism is not a collection of independently working organs but is a unified, correlated system in which the activities of each part work for the furtherance of the life of the whole. From this point of view one can readily appreciate why the brain and the heart are the structures that suffer least impoverishment when starvation depletes the bodily reserves; for they must remain active and alert until the end if the functions are to be successfully executed. Nevertheless there is such a manifestation as myocardial failure. It ought to be helpful to know on what it depends.

The oxygen supply to the cardiac muscle and the organic nutrients available for the contractile tissue undoubtedly play some part. In the case of muscle, the carbohydrate glycogen has been regarded as the dominant source of energy. Physiologic experiment has demonstrated over and over that when a muscle has executed a certain amount of work and has recovered from the consequent fatigue the net change produced in it is that its store of glycogen is smaller than at the outset. At the Mayo Foundation, Witting, Markowitz and Mann [6] have attempted to determine the survival period of a heart that is relatively free from glycogen. The experiments consisted in perfusion of the surviving organ, a technic that lends itself unusually well to the purpose outlined. Preliminary depletion can be produced by starvation on which strychnine poisoning is superimposed. The convulsions thus induced serve to use up the last of the stores of glycogen. It was found that hearts containing only traces of residual glycogen, less than 0.1 per cent, have approximately the same survival period as those which still contain a normal amount, 0.4 per cent, of the "animal starch," when the organs were perfused with a dextrose-free Ringer's solution. The Rochester physiologists admit that when glycogen is present in a heart it is used by preference, but that when it is gone some other foodstuff can serve as a source of energy. This is in harmony with the newer conceptions that the fundamental nutrients can replace one another in times of nutritive stress. It is well known that dextrose materially improves the value of a perfusing fluid. Witting, Markowitz and Mann venture the assertion, however, that the beneficial effect is not due to the direct conversion of the sugar to glycogen.

The heart also benefits by protections that are exercised in a mechanical or physical manner. Van Liere and Allen [7] observed that the pericardium tends to restrain acute cardiac dilatation in severe degrees of anoxemia which may exceed that occurring under physiologic conditions. Further evidence of the probably protective action of the pericardium in conditions of extreme stress on the heart has lately been presented by Van Liere and Crisler [8] at West Virginia University. They found that the pericardium restrains excessive cardiac dilatation caused by vagal stimulation. The protective rôle of the enveloping membrane thus seems to be well established.

The heart is also known to be subject to regulatory functions that are expressed in the conflicting manifestations of acceleration and inhibition. Overfunction on the part of either nervous mechanism seems to be prevented by the opponent. Thus, at Harvard University Medical School Moore and Cannon [9] have noted that after sympathectomy the vagal mechanism can slow the heart of experimental animals from a maximal rate of about 150 beats a minute to a minimum of about 75. On the other hand, after vagotomy the sympathetic mechanism can speed up the heart from a minimal rate of about 125 beats to a maximum of about 225. Such ranges of operation of the two systems of nervous control indicate, in the opinion of the Harvard investigators, that the vagal mechanism serves especially to assure opportunity for rest and recuperation of the heart, whereas the sympathetic mechanism, on the contrary, acts in emergency states when physical effort and stress require the heart to work vigorously.

4. Labrador—A Lesson in Practical Nutrition, editorial, J. A. M. A. **95**: 665 (Aug. 30) 1930.
5. Parsons, T. R.: The Materials of Life, New York, W. W. Norton & Co., 1930.
6. Witting, V.; Markowitz, J., and Mann, F. C.: The Rôle of Glycogen in the Perfused Heart, Am. J. Physiol. **94**: 35 (July) 1930.
7. Van Liere, E. J., and Allen, R. S.: Am. J. Physiol. **83**: 225 (Dec.) 1927.
8. Van Liere, E. J., and Crisler, G.: The Influence of the Pericardium on Acute Dilatation Produced by Vagal Stimulation, Am. J. Physiol. **94**: 162 (July) 1930.
9. Moore, R. M., and Cannon, W. B.: The Heart Rate of Unanesthetized Normal, Vagotomized and Sympathectomized Cats as Effected by Atropine and Ergotoxine, Am. J. Physiol. **94**: 201 (July) 1930.

HEPATIC VEIN REACTIONS IN CIRCULATORY CORRELATIONS AS EXEMPLIFIED BY EFFECTS OF DIGITALIS AND OTHER DRUGS

Owing to the large volume of blood which the liver can accommodate, reactions of the hepatic vessels might be expected to have important determining effects on the distribution of the blood in the body. This conception is not new, but its importance has not been fully recognized in the physiology and pharmacology of the circulation. The hepatic veins are richly endowed with smooth muscle and react to many poisons like arteries.[1] Constriction of the hepatic veins increases the size of the liver and simultaneously raises the pressure in the portal vein. In consequence of the constriction, the pressure in the inferior vena cava and right auricle and the venous return to the heart are decreased, and thus the output of blood from the heart is diminished. In other words, as the result of pooling of blood in the abdominal viscera, less blood is returned to the heart. Since the cardiac output of blood per minute is diminished, it follows that important organs, such as the brain, suffer a diminution in blood supply. These changes illustrate the remote effects that are possible from a vasoreaction in the liver. The opposite change in the hepatic veins, namely, dilatation, would give opposite effects. The importance of such reactions in the liver for the physiology, pharmacology and therapeutics of the circulation must be considerable.

Hepatic reactions may be more important for the circulatory state than has been realized in anaphylaxis and shock, in allergic shock from such drugs as arsphenamine, histamine and peptone, after such circulatory drugs as digitalis, epinephrine and the nitrites, and possibly after certain diuretics and a considerable number of musculotropic and neurotropic agents. In the case of digitalis, epinephrine, histamine and certain parasympathomimetic drugs, it has been recently shown that their actions on the hepatic veins definitely determine changes in cardiac output which must affect the distribution of the blood in the body.

In their studies of digitalis in dogs, Dock and Tainter[2] of the Stanford University School of Medicine have demonstrated that the effect of this drug on cardiac output is related to constriction of the hepatic veins, which causes diminution of the intra-auricular pressure and of the return of blood to the heart. The same effect was found to be true of strophanthus. As these investigators point out, the correlations between the hepatic changes, the intra-auricular pressure and cardiac output are not necessarily quantitative. The relative changes demonstrated by them leave no doubt, however, that a peripheral vasoconstriction, of the hepatic vein particularly, much better explains the decrease in output of blood by the normal heart than does the action of digitalis on this organ. Thus the Stanford investigators appear to dispose of recent erroneous contentions for a cardiac mechanism of the decreased output.[3] Not content with their experimental proofs of the actions of digitalis and strophanthus, Dock and Tainter tested the validity of their data by comparing the hepatic vein reactions to those of histamine and epinephrine, whose effects had been demonstrated mainly in perfused livers by others. The agreements were as nearly perfect as could be expected, although the correlations between the pressures in the critical regions studied were not always perfect after histamine and epinephrine because of the more generalized vasomotor effects caused by these drugs.

While this work points to the importance of hepatic vein reactions to digitalis in health, one will naturally be curious to know how the increased cardiac output after digitalis in disease might be reconciled with hepatic vein constriction, which, as stated, could only cause a decreased output. Dock and Tainter discuss this aspect of digitalis action and suggest that the effect on cardiac output varies with the functional state of the circulation. That is, in such pathologic states as heart failure with passive hyperemia, digitalis would tend to increase the cardiac output and restore the venous pressure to a normal level, although the output of the normal heart is reduced. These authors recall the fact that the heart contracts with increased efficiency after therapeutic doses of the drug and that the ventricular effect is to increase the cardiac output when it is abnormally low. To this might be added a possible unburdening effect on the heart, mediated through the hepatic vein constriction which would tend to decrease a preexisting increase in pressure and blood stagnation in the right heart. Thus, the combined actions of digitalis on the blood vessels and on the heart in pathologic states may result in a beneficial effect on the cardiac output. The quantitative changes may be, and probably are, not the same in man as in the dog, owing to the presence of more perfect compensating devices and to greater differences in sensitivity of the human than of the canine organism. Nevertheless, the importance of the hepatic reactions, described by Dock and Tainter, for a more accurate pharmacology of the circulation cannot be denied.

Not only is this true for pharmacology, but it is probably important for the circulatory correlations of physiology and the disturbances of these in pathology. It is always easier to speculate than to undertake the proof of the correctness of ideas, although it is from generalizations and from the recognition of possibilities, however apparently remote, that science steadily advances. In the case at hand, it requires no great imagination to see a possible origin of systemic disturbances, objective and subjective, mediated by hepatic

1. Mautner, H., and Pick, E. P.: Arch. f. exper. Path. u. Pharmakol. **142**: 271, 1929; Biochem. Ztschr. **127**: 72, 1922. Mautner: Wien. klin. Wchnschr. **3**: 2321 (Dec. 16), 2369 (Dec. 23) 1924. Simonds, J. P.: The Fundamental Physiologic Reaction in Anaphylactic Shock, J. A. M. A. **73**: 1437 (Nov. 8) 1919.

2. Dock, William; and Tainter, M. L.: J. Clin. Investigation **8**: 467 (April), 485 (May) 1930.

3. Harrison, T. R., and Leonard, B. W.: J. Clin. Investigation **3**: 1 (Oct.) 1926. Cohn, A. E., and Stewart, H. J.: Ibid. **6**: 53 (Aug.) 1928.

vein reactions to bodily poisons. Such poisons as histamine, choline and epinephrine, whose hepatic and circulatory actions are well known, naturally come to mind.[4] It is conceivable that liver discomfort, and even pain, might be related to the pooling of blood in the organ as the result of hepatic vein constriction caused by these poisons; possibly such obscure symptoms as lack of steadiness, or dizziness, in certain disease conditions as the result of cerebral anemia due to a decreased cardiac output of blood might arise from similar hepatic vasoreactions. The possibilities could be multiplied, but it must be admitted that more convincing proof of the presence of adequate quantities of such bodily poisons than exists at present must be produced. Nevertheless, the relation of hepatic reactions to circulatory correlations in physiology and pathology deserves more attention than it has received. In pharmacology, there would seem to be no doubt of its importance, for the results appear clean cut and easily reproducible.

Current Comment

THE LIVER AND FIBRINOGEN

Variations in the readiness with which blood clots are among the phenomena frequently brought to the attention of clinicians. The clotting "system" is admittedly a complicated one, far from being adequately understood. Both inhibiting and promoting factors may play a part in the process; but in any event the fundamental feature is the transformation of the circulating protein, fibrinogen, into the less soluble clot-forming fibrin. Without fibrinogen there can be no coagulation of the blood. The amount of circulating fibrinogen is by no means constant in quantity. This may be due to variations in the production of the protein as well as in its destruction or utilization. Physiologists have repeatedly inquired regarding the seat of fibrin formation and this function has from time to time been ascribed to different organs. The liver has tended to receive foremost recognition, though the satisfactory demonstration of its rôle has not been easy to secure. The most recent contribution to the subject, by Jones and Smith,[5] from the University of Rochester Medical School involves observations on animals deprived of the liver by the recent ingenious methods of complete hepatectomy. Following the removal there is a gradual fall in blood fibrinogen, so that as much as half of the latter may disappear within a few hours. The investigators ascribe this to a disturbance in the normal balance between the formation and the utilization of the clot-forming protein. In their judgment the liver is indispensable for the regeneration of fibrinogen. Jones and Smith admit the limitations of knowledge about the utilization of this substance under either normal or abnormal conditions. Fibrinous exudates of inflammation in and about areas of injury are well known. It is suggested, therefore, that in normal "wear and tear" fibrin is being used to close numerous tiny leaks in small vessels—leaks which result in part from innumerable small injuries.

4. Dale: Lancet, 1929, June, 1179, 1233 and 1285.
5. Jones, T. B., and Smith, H. P.: The Blood Fibrinogen Level in Hepatectomized Dogs and an Outline of a Method for the Quantitative Determination of Fibrinogen, Am. J. Physiol. **94**: 144 (July) 1930.

THE TYPHUS-LIKE DISEASES

The typhus-like diseases are at present the subject of much research and speculation. The latest discussion is as to whether the exanthematic fever of Toulon is the same disease as the exanthematic fever of Marseilles. Clinically, the resemblance has always been strong. At Toulon, however, there was lacking a black mark which in the case of the Marseilles patients indicated the source of infection from the dog tick *Rhipicephalus sanguineus*. Now Professor Plazy[1] reports two cases in which marines developed the exanthematic fever at Toulon apparently after being bitten by the tick, while other cases occurred on the cruisers among men who had had no shore leave and no contact with dogs, since dogs are not allowed on deck. At the same time Marcandier and Bideau,[2] working in the marine bacteriologic laboratory at Toulon, have incriminated a rat acarus which they believe may also convey the infection of exanthematic fever to man. True, the Marseilles observers have not found a positive Weil-Felix reaction in their cases but Professor Plazy believes that they may not have searched with sufficient diligence, pointing out that this reaction rarely appears before the first week of apyrexia and sometimes is not found until the second week. The objection to calling this fever "typhus" is the same objection that pertains to identifying Rocky Mountain fever in this country with the typhus exanthematicus of Europe. In the former case Burnet, Durand and Olmer have failed to produce cross-immunity in animals, and in the latter case Spencer and Maxcy have experienced similar failure. These, after all, are negative results, on which too much weight must not be placed. The fact that Maxcy and Mooser have established cross-immunity between typhus and Brill's disease will encourage other workers to pursue the attempts at identification of other typhus-like diseases. In the meantime such clearly marked differences of opinion as were recently shown at a discussion before the Royal Society of Medicine[3] are to be expected. On that occasion Dr. William Fletcher defended the separate titles of some of the typhus-like fevers of the Malay Archipelago, while Dr. E. W. Goodall protested against "encumbering the nomenclature with terms that emphasize only etiological points of secondary value." He added that Dr. Fletcher's work has shown that typhus fever is more widespread over the world than has been recognized and that its epidemiologic behavior varies according to conditions many of which are unknown and require further elucidation. While this may be an extreme point of view, it is the one to which modern evidence is quite distinctly tending.

1. Plazy, L.: Fièvre exanthématique et réaction de Weil-Felix, Presse méd. **38**: 1044 (Aug. 2) 1930.
2. Marcandier and Bideau: Note sur l'épidémiologie de la fièvre exanthématique observée à bord des navires de guerre à Toulon: Rôle possible d'un acarien du rat dans la transmission, Rev. d'hyg. et de méd. prév. **52**: 353 (May) 1930.
3. Fletcher, William: Typhus-Like Fevers of Unknown Etiology with Special Reference to the Malay States, Proc. Roy. Soc. Med. **23**: 1021 (May) 1930.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts at 10 a. m. on Monday, Tuesday and Saturday, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week is as follows:

September 22. Whose Is the Responsibility?
September 23. Sleeplessness.
September 27. Cleaning Up the Milky Way.

Five Minute Health Talks may be heard over the Columbia Broadcasting System daily from 1 to 1:05 p. m., Chicago daylight saving time.

The program for the week is as follows:

September 22. Do You Know Your Milk?
September 23. Is Your Stomach Upset?
September 24. Pressing a Painful Point.
September 25. Clean Water.
September 26. Eczema.
September 27. The Clerical Casualty Club.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Society News.—The Talladega County Medical Society was addressed, September 2, by Drs. John D. Sherrill, Birmingham, on "Injuries to the Back," and Nuckols T. Davie, Anniston, on "Diseases of the Ear."——Dr. James N. Baker, state health officer, who recently addressed the physicians and health officers of northern Alabama at Sheffield, reviewed the work being done in Colbert County in the malaria campaign.

CALIFORNIA

Society News.—The Glendale branch of the Los Angeles County Medical Association was addressed, September 15, by Dr. Victor G. Vecki, San Francisco, on "Syphilis—From the Standpoint of the General Practitioner"; the Santa Monica branch of the society was addressed, September 16, by Dr. Howard L. Updegraff, Hollywood, on "Methods of Reconstructive Surgery.——The city of Soledad, Monterey County, has transferred the work of its health department to the Monterey County Health Department, of which Dr. Roy Macleay Fortier is health officer.——The Alameda County Medical Association was addressed, September 15, by Dr. Charles L. McVey, "Banti's Disease"; Thomas C. McCleave, "Bacteriophage Treatment of Typhoid"; William H. Sargent, Oakland, "Tumors of the Humerus."

Epidemic Poliomyelitis Less Prevalent.—The epidemic of acute anterior poliomyelitis which has prevailed during the present summer is subsiding rapidly. The department of public health states that since the middle of July, when the disease reached the peak, the number of cases reported decreased by 47 per cent. There were but fifty-two cases reported during the week ending August 16. Since the beginning of the year a total of 880 cases of the disease have occurred in California; 784 were reported from the eight counties of Southern California and the remaining 95 cases were in twenty-two other counties of the state. No cases were reported from twenty-eight counties. Relatively few deaths have occurred and few cases of paralysis have been left in the wake of the epidemic. Any further rise of the prevalence of the disease this year is not expected.

Personal.—Dr. Walter M. Dickie, director of the state department of health, celebrated the tenth anniversary of his appointment as a member of the California State Board of Public Health, August 9.——Dr. Linus H. Bittner, Glendale, has been appointed associate professor of research at the University of California Medical School, San Francisco.——Dr. Herbert F. True, for four years connected with the San Francisco City Health Department, has been appointed city health officer of Sacramento; Dr. Walter E. Coppedge succeeds Dr. Alexander Gibson as health officer of Modoc County; Dr. LeRoy R. Hillyer succeeds Dr. Raymond Jadarola as health officer of Los Banos.——Dr. Emile Holman, professor of surgery, Stanford University School of Medicine, San Francisco, has been granted leave of absence during the autumn quarter to serve as visiting professor of surgery in Peiping Union Medical College, Peiping, China.

Reciprocity License Denied.—The writ of mandate brought by Dr. Maximilian L. Herzig to compel the California Board of Medical Examiners to issue a reciprocity license based on his Nevada credentials was denied by Superior Judge Robert B. Lambert in Los Angeles, August 12. Herzig's claim for reciprocity is said to have rested on having diplomas from the National Medical University of Chicago, the St. Louis College of Physicians and Surgeons, the Royal University of Naples and the University of Lausanne. The National Medical University, Chicago, was declared not in good standing by the Illinois State Board of Health, April, 1909. Its charter was canceled in 1914. The St. Louis College of Physicians and Surgeons was conspicuous a few years ago in the diploma mill investigation. The Supreme Court of Missouri declared its charter, articles of incorporation and franchise forfeited, May 23, 1927. Evidently the poor reputation of both of these schools was established with the court for the California board was held to have been within its rights in denying recognition to Herzig's credentials.

COLORADO

Salesman Victimizes Physicians.—Physicians of Longmont have reported that a salesman pretending to represent a well known national clothing and uniform company is victimizing doctors and dentists. The man exhibits apparently satisfactory credentials in the form of printed order blanks and salesbooks. He takes orders for office coats and uniforms and accepts deposits on account, the balance supposedly to be paid direct to the national company on delivery of the uniforms. The uniforms never arrive and correspondence with the firm in question has shown that the supposed salesman is an impostor.

Society News.—The Larimer County Medical Society met, June 1, at the Colorado Agricultural College and was addressed by Dr. James F. Percy, Los Angeles, on removal of carcinoma with cautery, illustrated with slides and moving pictures.——The midsummer clinic of the El Paso County Medical Society, August 6, was given by the members of the staff at the Union Printers' Home. Drs. Alfred Lee Briskman talked on "Causes of Sudden Death, Based on a Study of Fifty Cases"; Frank T. Stevens, Colorado Springs, "Polyneuritis as the Result of Ingestion of Jamaica Ginger"; Charles O. Giese, Colorado Springs, "Differential Diagnosis in Aneurysm and Mold Infections of the Lung."——The Otero County Medical Society was recently addressed at La Junta by Dr. Benjamin Franklin Blotz, Rocky Ford, on a tour of European clinics.

ILLINOIS

Personal.—Dr. Harry E. Marselus, formerly assistant directing officer at the East Moline State Hospital, has been transferred to the state school at Dixon. He will be succeeded at the East Moline Hospital by Dr. Wilson K. Dyer of the state hospital at Peoria, and Dr. Dyer's position will be filled by Dr. Henry B. Knowles of the Dixon school.

U. S. Milk Inspection.—The milk sanitarian from the U. S. Public Health Service is making a two months' inspection tour to ascertain the prevailing sanitary conditions in the industry covering the handling of milk from the cow to the consumer. He will inspect milk distributing and pasteurizing plants, transportation facilities and producing farms in fifteen representative communities of all population ranges. The cities selected at random include Chicago, Peoria, Rockford, East St. Louis and Springfield in the upper population group; Quincy, Urbana-Champaign, Joliet, Decatur and Elgin in the intermediate group; and Mount Vernon, Murphysboro, Carlinville, Paris and De Kalb as the group of least population. Ratings will be made on the basis of the sanitary conditions found and computed with those found in other states, and the report based thereon will be submitted to the White House Conference on Child Health.

Chicago

Society News.—Sir James Purves-Stewart, English neurologist, lectured at Northwestern University Medical School, September 16, in the Ward Memorial Building, 303 East Chicago Avenue, on "Disseminated Sclerosis."

Diploma Lost.—The medical diploma of Damaso Tumaneng Samonte, dated Sept. 1, 1930, has been reported as lost by Dean Louis D. Moorhead of Loyola University School of Medicine. The loss occurred while the diploma was being transferred by messenger from the arts and science department of the university to the medical school. It did not contain the signature of Dean Moorhead or the university seal.

LOUISIANA

Festschrift Volume in Honor of Dr. Matas.—A committee of professional friends and colleagues, with Dr. Isidore Cohn as chairman, have announced that a festschrift volume honoring Dr. Rudolph Matas, New Orleans, will soon be published. The book will have a distinguished list of contributors, among whom will be Wilkie of Edinburgh, Leriche of Strasbourg, Alessandri of Rome, Pujol of Barcelona, Moure of Paris, and Finney, Crile, Mayo, Reid, Hoffman and Lilienthal of this country. Dr. Matas was born seventy years ago on the 12th of September at Bonnet Carre, La., and was graduated in medicine twenty years later from the Tulane University. The book will mark the appreciation of Matas' contribution to surgical science, notably in vascular surgery.

MARYLAND

Johns Hopkins Unit Nears Completion.—The progress of construction of the first unit of the new medical and surgical clinic for the Johns Hopkins Hospital, to be known as the Osler Clinic, now in course of erection, indicates that the opening of the unit for reception of patients will be January. On its completion, work will be started immediately on the construction of the surgical unit to be known as the Halstead Clinic. These units will add 165 beds to the hospital capacity and will increase the present number of beds in the institution from 747 to 912. All beds in the new building will be in wards to be devoted to the poor of the city. The building will be equipped with laboratories for research of medicine and surgery and with facilities for physical therapy and hydrotherapy. The expenditure represented by the addition to the hospital will be in excess of $1,300,000, which was supplied by the general education board.

MICHIGAN

Hospital News.—The formal dedication of Ingham County's new tuberculosis sanatorium was made, July 30. The building was erected at a cost of $400,000. Among the speakers at the dedication was C. C. Young, director of laboratories of the state department of health.

Society News.—The department of health of Detroit, through the school health service has begun a classification of heart disease in children of the grade schools to extend throughout the coming year. Sixty rooms in the city schools are especially equipped to care for these children. A total of 420 cardiac patients were cared for in 1929-1930, more than 100 of whom were transported to and from school. Dr. Ray E. Logan will continue in charge of this work.——Dr. Frank A. Kelly gave a paper on "Observations of a Thousand Cases of Local Anesthesia," with lantern slides, before the West Side Medical Society, Detroit, September 18.——The Calhoun County Medical Society, meeting jointly with the Kalamazoo Academy of Medicine, was addressed, September 11, by Drs. Ray C. Stone, Battle Creek, on "Diagnosis of Intestinal Obstruction"; Clifford W. Brainard, "First Aid in the Small Factory," and H. B. Knapp, "Foot Strain."

MISSISSIPPI

Medical Faculty Reinstated.—The sweeping changes in the teaching personnel of the University of Mississippi School of Medicine, mentioned in THE JOURNAL, August 16, have been reversed by the authorities. Recently the men who were discharged have been reappointed and the Council on Medical Education of the American Medical Association has continued the rating of this school in class A.

NEW YORK

Society News.—The twenty-fourth annual meeting of the Sixth District Branch of the Medical Society of the State of New York will be addressed at Cooperstown, September 23, by Drs. Wardner D. Ayer, Syracuse, on "Neurological Aspect of the Fractured Skull"; Donald Guthrie, Sayre, Pa., "The Tragedy of Appendicitis," and Arthur J. Capron, Owego, "Mental Hygiene."

Outbreak of Septic Sore Throat.—An extensive outbreak of septic sore throat, occurring in June, in the village of Millbrook and the town of Washington, Dutchess County, largely affecting adults and traced to the use of raw milk, was found to be due in some cases to hemolytic streptococci. The outbreak involved eighty-eight cases, in seventy-eight of which there was a definite history of having drunk from an incriminative milk supply. Hemolytic streptococci were isolated from the cultures from four patients and from the milk of one cow. These five strains were found to be identical in their cultural, biochemical and toxigenic reactions.

Rural Incidence of Syphilis.—The results of surveys of the incidence of syphilis in upstate New York, conducted by the division of social hygiene of the state department of health, have recently been reported. Sixty per cent of the people in New York reside in urban districts, and laboratory reports show syphilis to be four and one-half times as prevalent in urban as in rural districts. The incidence of the disease in rural New York varies from 165 to 321 per hundred thousand of population. Even at the minimum incidence at 165, it is estimated there would be 10,000 new cases of syphilis each year. During a study of nearly 26,000 cases treated in fifty clinics during a period of eight years, it was computed that the ratio of patients under supervision on any particular day was to the number of new cases per annum as 1.00 to 1.22. Using this factor and the cases reported under supervision in the one day survey made by the division of social hygiene in 1927, it was estimated that new cases of syphilis in upstate New York per annum numbered 321 per hundred thousand of population. Computed bases were further estimated in the one year survey of sickness in rural New York, conducted in thirty-three counties having a population of 101,000, where the incidence rate was found to be 261 per hundred thousand and the 1927 survey in communities of less than 4,000 conducted in Essex County, where the incidence was 165 per hundred thousand.

New York City

Personal.—Dr. John H. Paul of the Rockefeller Foundation will remain for about a year in Spitzbergen under the joint auspices of the Foundation and the Norwegian government to study respiratory diseases. Similar studies have already been made in Labrador and the United States. The purpose is to gather, if possible, further information on the manner of the transmission of respiratory diseases including colds, influenza and pneumonia.

Getting Rid of Smoke.—A study of means to abate the smoke in the city which now cuts off 40 per cent of the sunshine was recently made under the direction of the health commissioner. Ten inspectors viewed different parts of the city from skyscrapers. The health department experts offer advice to citizens on methods of getting rid of smoke, once the sources have been located. Punitive measures will be taken against persistent offenders of the sanitary code.

Hospital News.—A new division of physical therapy for city hospitals has been created with Dr. Charles F. McCarty, Brooklyn, in charge.——The Lincoln Hospital, in the Bronx, is to be reconstructed at an approximate cost of $1,160,000. The alterations will be made without disturbing the hospital routine or the care of patients. The number of beds in Lincoln Hospital at present is 423. Under its former management as a privately owned institution, Lincoln Hospital functioned in connection with a school to train and educate Negro women in nursing.

OHIO

Personal.—Frank E. Chapman, director of Mount Sinai Hospital, Cleveland, since 1915, has been appointed director of the Western Reserve University Hospital group to succeed Dr. Karl H. Van Norman, who recently resigned after five years' service. The group includes the Lakeside, Babies and Maternity hospitals.——Dr. George D. Upson has resigned as chief of the medical division of the accident department of the Cleveland Railway Company; he will be succeeded by Dr. James G. Jones.——Dr. Elliott P. Joslin, Boston, was guest speaker at the opening, August 3, of a diabetic camp on the estate of Dr. Henry J. John in Geauga County.——Dr. Arthur I. Fink, formerly on the staff of the Mount Sinai Hospital, has joined the medical field force of the state department of health as junior physician in the division of child hygiene.——Dr. Carl J. Wiggers represented Western Reserve University at the medical meetings held in connection with the celebration of the one hundredth anniversary of Belgian independence in Brussels.——Dr. Frank Lande, McConnellsville, who has been resident physician at the Rocky Glen Sanatorium, has resigned to accept a position as a district physician under the Cincinnati Department of Health.——Dr. John R. Mannix has recently resigned as superintendent of Elyria Memorial Hospital, to become assistant director of the University Hospital group in Cleveland.

OREGON

Illegal Practitioners Convicted.—W. H. Rockwell, naturopath, was convicted of practicing medicine without a license in the circuit court at Burns recently; J. A. Smith, Klamath Falls, was convicted of practicing medicine without a license, June 19; he was fined $250 and sentenced to thirty days in jail. Anthony J. Corbett, Portland, was recently convicted of practicing medicine without a license and fined $100.

Licenses Revoked, Suspended and Restored. — The licenses of Dr. George Orlo Jefferson was revoked recently on a charge of unprofessional conduct. The license of Dr. Horace M. Patton was suspended for six months on probation. The license of Dr. Frank C. Hart, which was revoked, Oct. 28, 1926, was restored to him, August 8. These physicians were Portland practitioners.

PENNSYLVANIA

Society News.—The Clearfield County Medical Society was addressed at Du Bois, September 10, by Drs. Holland H. Donaldson, associate professor of surgery, University of Pittsburgh School of Medicine, on "Surgical Lesions of the 'Acute Abdomen,'" and William J. Fetter, Pittsburgh, on "Thyroid and Parathyroid Dysfunctions."

Personal.—Dr. Herbert R. Edwards, New Haven, Conn., has been appointed superintendent of the new Delaware County Tuberculosis Hospital, Concord. He will supervise the erection of the new hospital at Broadmeadows Farm, which will be called Delwood.——Dr. Henry E. Austin, Upper Darby, was recently appointed chief resident psychiatrist at Gallinger Hospital, Washington, D. C. Dr. Austin formerly was clinical director of the Connecticut State Hospital for six years.

State Medical Meeting at Johnstown, October 6-9.—The eightieth annual session of the Medical Society of the State of Pennsylvania will be held at Johnstown, October 6-9, with headquarters at the State Theater and under the presidency of Dr. William T. Sharpless, West Chester. The guest speakers will include Drs. Charles R. Austrian, Baltimore, on "Some Present-Day Therapeutic Measures"; John Alexander, Ann Arbor, Mich., "Present Status of Thoracic Surgery"; Loring T. Swaim, Boston, "Chronic Arthritis"; William F. Braasch, Rochester, Minn., "Recent Clinical Data on Tuberculosis of the Urogenital Tract"; Joseph Colt Bloodgood, Baltimore, "Problems of Cancer of the Stomach: Education, Operative Technic, Therapy, Ultimate Result and Research"; Hubert A. Royster, Raleigh, N. C., "The Tragedy of Appendicitis"; Arnold Knapp, New York, "Some Points in Connection with Cataract Extraction"; Joseph C. Beck, Chicago, "Personal and Practical Experiences with Neoplasms about the Head and Neck, with Special Reference to the Ear, Nose and Throat"; Clifford G. Grulee, Chicago, "Intraperitoneal Therapy in Infants and Young Children," and George M. MacKee, New York, "Treatment of Oral and Skin Cancer." Symposiums will be given on the gastro-intestinal tract, significance of personality make-up in medicine, tuberculosis of the genito-urinary tract, thyroid disease, fractures, ovarian cysts, osteomyelitis and diabetes mellitus. A program of interesting entertainment has been arranged.

TENNESSEE

Society News.—The Nashville Academy of Medicine was addressed, September 2, by Dr. John Overton, on "Further Report of Use of B C G Vaccine in Control of Tuberculosis."——The Robertson County Medical Society was addressed at Perry's Park, August 19, by Drs. Emmett E. Brown, Nashville, and Walter L. Gossett, Adairville, Ky., on "Value of an X-Ray Examination of the Chest" and "Diarrheas in Infancy"; Dr. Frederick E. Hasty, Nashville, spoke on "Some Reasons Why Tonsillectomy Is Not a Panacea."——The Roane County Medical Society was addressed at Harriman, August 19, by Dr. James C. Fly, Kingston, health officer of Roane County, on "Intestinal Parasites," with especial reference to the hookworm and the roundworm.——The Nashville Academy of Medicine was addressed, September 9, by Dr. Murray B. Davis on appendicitis.

WEST VIRGINIA

Society News. — The Central Tri-State Medical Society was addressed at Huntington, September 18, among others by Drs. Lee Foshay on diagnosis, and Robert Carothers, Cincinnati, "The Modern Treatment of Fractures."——The Monongalia County Medical Society was recently addressed by Dr. Chester R. Ogden, Clarksburg, on "European Clinics."

Illegal Practitioner Flees.—A warning has been sent out by State Health Commissioner Dr. William T. Henshaw for the apprehension of William B. Hite, who is said to have been a persistent violator of the West Virginia Medical Act for years. It seems that this man is employed from time to time to assist the physicians in charge of medical services of mining operations and other industrial enterprises. His name does not appear on the list of physicians licensed to practice in West Virginia. Wherever he has been located, legal measures have been issued for the purpose of prosecution, but he usually departs before service can be executed.

WISCONSIN

Indian Clinics.—The Indian clinics held at various centers under the auspices of the state board of health, with the cooperation of the federal Indian service, disclosed that, of 780 Indians of the Odanah reservation, and the Redcliff and Bayfield settlements who were given chest examinations, 111, or 14 per cent, were found to have tuberculosis. About 400 Indians attended the clinics held at Wabeno and Crandon.

Society News.—The Medical Society of Milwaukee County will conduct a periodic health examination campaign. The society sponsored a campaign against diphtheria during August. In Milwaukee, only 30 per cent of the children of preschool age were immunized against diphtheria. To facilitate the immunization of children by the physician in individual practice, the health department supplied physicians with toxin antitoxin.——Fifteen cases of malaria fever were reported to the Wisconsin State Board of Health, according to a statement issued August 7. Eleven of the cases occurred in the Madison area and four in Milwaukee County.

Hospital News.—The state cooperative laboratory, which has been maintained in Beloit as a part of the state health department, has consolidated with the laboratory of the Beloit Municipal Hospital. Dr. Clifford W. Andrews, city health officer, announces that the laboratory will consist of two departments, the public department under the direction of the health department of the state, and the hospital department under the direction of the hospital.——A gift of a sixty bed convalescence home to the Milwaukee Children's Hospital was recently announced. The cost of the building, with grounds, will be $250,000. The donors are Mr. and Mrs. L. R. Smith of Milwaukee.

GENERAL

Casselberry Prize Fund.—The sum of $500, which has accrued from the Casselberry Fund for encouraging advancement in the art and science of laryngology and rhinology, is now available as a prize award, decoration or the expense for original investigation and research. Theses or reports of work must be in the hands of the secretary, Dr. George M. Coates, 1721 Pine Street, Philadelphia, before February 1 of any given year.

A New Journal on Cancer.—A new medical publication to be called the *American Journal of Cancer* will make its first appearance, January 1, it is announced. It will replace the *Journal of Cancer Research* and will be the official journal of the American Society for the Control of Cancer and the American Association of Cancer Research Workers. It is stated that, for the first time in one journal, research workers can read about the educational and clinical side of human cancer, and clinical members of the medical profession will be brought in contact with cancer research throughout the world. The *Journal* will be issued by the Chemical Foundation, New York, with Dr. Francis Carter Wood, editor.

Fraudulent Magazine Solicitors.—The Crowell Publishing Company has called attention to the fact that numerous physicians in Indiana and Michigan have been victimized by a fraudulent salesman who goes by the names of Southerland, Meyers, Hill, Lane or Hamilton. This man is about 32 years old, 5 feet 5 inches tall, weighing about 150 pounds, with sandy hair, and is a pleasant talker. He uses portions of a receipt blank issued by the *Woman's Home Companion* Reading Club of Detroit, but he tears this blank in half after collecting $1.80 from the physician, promising to send three different magazines for one year. In most cases *Collier's* is included. On recognizing this person physicians are requested to inform the police or secretary of the National Publishers Association, 15 West Thirty-Seventh Street, New York City.

Results of Milk Sanitation Program. — Studies of two years' experience with the Sanitary Milk Ordinance as outlined by the U. S. Public Health Service shows that twenty-six states containing more than 75 per cent of the state's urban population enjoy high grade protection of their milk supplies, as against six cities formerly. It was shown that retail raw milk has improved 91 per cent in sanitary quality; the raw milk delivered to pasteurization plants 89 per cent, and the

pasteurization plants 109 per cent. Milk consumption has increased 23 per cent: the number of cities having pasteurized milk has doubled and the use of pasteurized milk has risen 117 per cent. During the past two years in which the U. S. Public Health Service has been engaged in studies relating to milk sanitation, 375 cities located in more than twenty states have adopted the program. The movement was in response to requests from state health departments to formulate and assist in beginning the execution of state-wide plans of milk control.

Society News.—The fifty-ninth annual meeting of the American Public Health Association, to be held at Fort Worth, Texas, October 27-30, will feature a symposium on meningitis, psittacosis, interrelation of the health officer and general practitioner to preventive medicine, atmospheric pollution, undulant fever, malaria control and occurrence of minute amounts of metal in foods. The presidential address will be given by Dr. Albert J. Chesley, St. Paul, and the general session will be addressed by Dr. Rafael Silva, chief of the departamento de Salubridad Publica, Mexico City, on "The Health Problem in Mexico." Entertainment will include a barbecue and a rodeo. A postconvention tour will be made to Mexico City. Meetings of other organizations during the convention will include the American Association of School Physicians, jointly with the International Society of Medical Health Officers, the Association of Women and Public Health, and the Conference of State Sanitary Engineers and the Texas Association of Sanitarians. ——The International Stomatologic Congress was held at Venice, Italy, September 15-19, under the honorary presidency of Professor Cavallero, president of the Italian Stomatologic Federation.

Meeting of American Hospital Association.—The thirty-second annual convention of the American Hospital Association will be held in New Orleans, October 20-24, with Dr. Christopher G. Parnall, Rochester, N. Y., presiding. Among the speakers before sections will be Dr. John A. Hornsby, University, Va., who will discuss "Some Special Problems of Southern Hospitals"; Dr. Samuel Bradbury, Philadelphia, "Criteria of Adequate Medical Service in the Outpatient Department"; Dr. William D. Stovall, Madison, Wis., "Training of Laboratory Technicians"; May Ayres Burgess, Iowa City, Iowa, "The University's Responsibility in the Training of Nurses," and Dr. Ernest S. Mariette, Oak Terrace, Minn., "The Sanatorium, Past, Present and Future." There will be commercial exhibits and booths devoted to education. Entertainment will include a boat trip up the Mississippi River and a post convention party will go on the United Fruit Company's steamship *Parismina* to Havana, Panama and Guatemala. During the week of October 20-24 will also be held the meetings of the American Hospital Association of Hospital Workers and the Children's Hospital Association of America. Preceding the American Hospital Association's sessions, the annual convention of the American Protestant Hospital Association will be held in New Orleans, October 17-20.

Association of American Medical Colleges.—This association will hold its forty-first annual meeting at the University of Colorado School of Medicine, Denver, October 14-16. The following program will be presented: First day: "A Survey of Several Educational Experiments in American University Medical Colleges," Dr. G. Canby Robinson, New York Hospital-Cornell Medical College Association; "Correlation Clinics in Freshman and Sophomore Years," Dr. William A. O'Brien, University of Minnesota Medical School; "Development of the Liaison Activities of a Department of Pathology," Dr. Harold E. Robertson, University of Minnesota Graduate School of Medicine; "Relation of Autopsies to Teaching," Dr. Walter A. Bloedorn, George Washington University School of Medicine; "New Teaching Clinic and Curriculum at Tulane," Dr. Charles C. Bass, Tulane University of Louisiana School of Medicine; "Progress in Teaching Psychiatry," Dr. Franklin G. Ebaugh, University of Colorado School of Medicine. Second day: "Methods of Admitting Medical Students," Robert C. Lewis, Ph.D., University of Colorado School of Medicine, and "Report of Committee on Aptitude Test," Dr. Torald H. Sollmann, chairman; Western Reserve University School of Medicine. The Committee on Aptitude Tests has given much thought and time to carrying out its research during the past year. Many schools have cooperated with the committee, and doubtless definite results have been obtained. "Relation of Association to State Licensing Boards," opened by Dr. Harold L. Rypins, secretary, Board of Medical Examiners of State of New York. The matter of state board cooperation has been before the association since 1928. Third day: "Admission of Patients from Outpatient Clinic to Hospital," Drs. Harry R. Wahl, University of Kansas School of Medicine; "Relative Value of Cultural Courses in Premedical Training," Edward S. Thorpe, University of Pennsylvania School of Medicine; "Cultural Value of the Medical Curriculum," Elias P. Lyon, University of Minnesota Medical School; "Utilization of the Roentgen Ray in the Teaching of Anatomy and Physiology," James P. Kerby, University of Utah School of Medicine; "Teaching of Tuberculosis," Esther Rosencrantz, University of California Medical School. The headquarters of the association will be at the Brown Palace Hotel, where the annual "get acquainted" dinner will be given Tuesday evening. The speakers will be Dr. William Darrach, New York, who will deliver his presidential address, and George T. Norlin, president of the University of Colorado. Dr. Maurice H. Rees, vice president of the association and dean of the Medical School of the University of Colorado, will be toastmaster. Inquiries may be addressed to the secretary, Dr. Fred C. Zapffe, 25 East Washington Street, Chicago.

FOREIGN

Immunization Against Cholera.—The Indian government has invited Dr. Felix d'Herelle of Yale University School of Medicine, New Haven, Conn.; Major R. H. Malone, officiating director of the Pasteur Institute at Kasauli, and Dr. S. N. Lahiri to investigate the immunization of entire communities against Asiatic cholera with the bacteriophage.

Society News.—The French Society of Reparative, Plastic and Aesthetic Surgery will meet, October 3-4, at the Hotel Chambon, 95 rue du Cherche Midi.——The Second International Congress of Comparative Pathology will be held in Paris, October 14-18. The subjects to be discussed will include tuberculosis, cancer, psittacosis, the ultraviruses, undulant and abortive fevers, anaphylaxis and milk. Professor Archard is president of the congress.——The eighth congress of the Far Eastern Association of Tropical Medicine will be held at Bangkok, December 7-21. The first week will be devoted to scientific sessions and the second week to tours in Siam. Further information may be secured from the local provincial secretaries, or the acting secretary for India, Central Research Institute, Kasauli, Punjab, British India, or the Far Eastern Association of Tropical Medicine, Hoofdkantoor Van den Dienst der Volksgezondheid, 10 Parapattan, Weltevreden, Java.—— The first congress of the International Society of Experimental Phonetics, held, June 10-15, at Bonn, was addressed by Dr. Gutzman, Berlin, who gave a demonstration of a roentgen speech film in which the movements of the larynx, hyoid bone and tongue appeared with great clearness. This will be combined with the speaking film so that the movements of the organs can be seen and the speech heard at the same time. This method will be useful for the investigations of speech from a linguistic point of view and for purposes of instructions. At a meeting of the council, the secretarial bureau was definitely located at 73 Welbeck Street, London, W. 1.

Government Services

Change of Station in the Navy

The following changes of station in the navy have recently been announced: Capt. Edgar L. Woods to Brazil, U. S. Naval Mission; Lieut. Comdr. Hillard L. Weer to Guardia Nacional, Nicaragua; Lieut. Frederick R. Haselton, to duty involving flying, U. S. S. *Lexington;* Lieut. Albert Ickstadt, Jr., to duty involving flying, U. S. S. *Saratoga;* Comdr. Luther Sheldon, Jr., to University of Pennsylvania Graduate School of Medicine, Philadelphia; Lieut. Comdr. Fenimore S. Johnson to U. S. S. *Richmond,* about October 1; Lieut. Victor B. Riden, about October 9, to second brigade, U. S. Marines, Guardia Nacional, Nicaragua; Lieut. Bernard S. Pupek to naval hospital, Washington, D. C.; Lieut. Bruce M. Summers to naval training station, Newport, R. I.; Lieut. Francis P. Gilmore to navy yard, Philadelphia; Comdr. Robert G. Davis to duty involving flying-aide on staff, air squadrons, battle fleet; Capt. Robert G. Heiner, to such duty as may be assigned, Marine Detachment, American Legation, Peiping, China; Comdr. Royall R. Richardson, to the Navy Recruiting Station, St. Louis; Comdr. Renier J. Straeten, to Marine Recruiting Station, Los Angeles; Comdr. Daniel Hunt, to the U. S. S. *New Mexico;* Lieut. Comdr. Hutchens C. Bishop, Jr., to the Naval Training Station, Hampton Roads, Va.; Lieut. John L. Farmer, to the Marine Corps Base, San Diego, Calif.; Lieut. Henry W. Patton, to the Naval Hospital, San Diego, Calif.; Lieut. David B. Peters, to the Naval Ammunition Depot, Hawthorne, Nev.; Lieut. Comdr. Wendell H. Perry, to the Naval Hospital, Mare Island, Calif.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 30, 1930.

A Standard for Vitamin D

The Medical Research Council's Committee on Accessory Food Factors has long attempted to find generally acceptable conventions for the record of the activities of the vitamins. But the biologic effects on which standardization depends involve variable factors, such as the severity of the condition treated in the experimental animals, differences in dieting, and treatment. With regard to vitamin D the committee recently reported as follows: "Any unit or standard based directly on the response of experimental young rats to antirachitic material is unsatisfactory, owing to disproportionate variation in the response to equal doses of apparently similar animals, when tested at different seasons of the year or bred in different laboratories. The vitamin D unit should rather be referred to a stated quantity of some standard antirachitic material, with which comparison can be made by any reliable biological method." The production of this vitamin artificially from ergosterol has led to several unofficial "units" from manufacturers, mostly defined in terms of some biologic effect and having no clear relation to one another. The preparation by the National Institute for Medical Research of a standard oily solution of ergosterol was therefore arranged. The ergosterol was prepared from yeast, purified and dried by methods carefully recorded, and was subjected in an alcoholic solution to irradiation from a mercury arc under measured conditions. The irradiation products were freed from alcohol and were dissolved in pure olive oil, and the volume was adjusted to a known concentration. The solution is kept in the refrigerating chamber of the institute at a temperature of from 4 to 0 C. Tests show that so kept the activity of the solution remains unchanged for two years, but at a room temperature loss of activity may occur. This solution is recommended for adoption as a standard for the estimation of vitamin D. The unit of vitamin D is defined as the antirachitic potency of a quantity of this preparation corresponding to 0.0001 mg. of the ergosterol used in its production. Either the x-ray method or the "line test" or chemical analysis of the bones of the experimental animals is recommended for use in the estimation. As the supply of the standard solution is limited, it is hoped that users will themselves prepare standard solutions, retaining the institute's for reference.

The Churches and Birth Control

Since the topic of birth control has become prominent in the press, the clergy of all churches have found it necessary to make pronouncements. The most important is the encyclical letter just issued by the seventh Lambeth conference of the archbishops and bishops of the Church of England. In dealing with questions of sex and marriage the conference affirmed the duty of parenthood as the glory of married life but on the subject of birth control made the following guarded pronouncement: "Where there is clearly felt moral obligation to limit parenthood the method must be decided on Christian principles. The primary and obvious method is complete abstinence from intercourse (as far as may be necessary) in a life of discipline and self-control lived in the power of the Holy Spirit. Nevertheless in those cases where there is such a clearly felt moral obligation to limit or avoid parenthood, and where there is a morally sound reason for avoiding complete abstinence, the conference agrees that other methods may be used, provided that this is done in the light of the same Christian principles. The conference records its strong condemnation of the use of any methods of conception control from motives of selfishness, luxury or mere convenience." This carefully guarded tolerance of birth control under certain conditions was not unanimous but was carried by a majority of 193 votes to 67. It was quickly denounced by Father Woodcock, a well known Roman Catholic preacher.

On the other hand, the dean of St. Paul's, Dr. Inge, a leader of the modernist school in the Church of England, has taken a different view. In his presidential address at the Modern Churchmen's Conference he said that some method of checking the natural growth of numbers beyond the means of subsistence was always necessary and had nearly always been practiced. The choice lay between new methods and the criminal practice of abortion, which was much more common in this country than many supposed. It was no use discussing the morals of birth control apart from the facts relating to population, and the optimal population of these islands was much less than the 48 millions who now inhabited them. They must consider what method of rational adjustment was most free from moral objections. Mr. C. J. Bond, consulting surgeon to the Leicester Royal Infirmary and vice president of the Eugenic Society, well known as a writer in the medical press, said that little organized effort had been made to improve the standard of life, and civilized nations were mainly breeding from the inferior portions of the populace. Much of our social legislation was not founded on sound biologic principles. Civilized man was now called on to play a larger part in controlling human destiny. As far as he could see, the effect of conception control up to the present had been dysgenic. There was little or no evidence that conception control was harmful to the health of the individual and approved methods did not impair future fecundity. Sterilization should be performed on irresponsible persons of low intelligence and weak will. In birth control the important thing was to guide artificial selection into right channels, having regard to quality as well as quantity. Rev. C. F. Russell said that we would ultimately come to the point at which a license would be granted by the state for permission to bring a child into the world. Before this was granted the applicants would have to show that they were physically fit to produce children and economically capable of supporting them. Sterilization might be the punishment for those who bore children without having been granted a license.

The Performance of Necropsies by General Practitioners

A correspondent in the *British Medical Journal* has at last ventilated an evil of long standing — the performance of necropsies by the ordinary physician on the command of the coroner. The correspondence began with the letter of a rural physician who reluctantly undertakes this task about once in two years and who claims as much (or as little) knowledge of morbid anatomy as his brethren in similar circumstances. He complains of having "to outrage his conscience" every time he reports on the cause of death. As a student he performed the prescribed number of necropsies and as a house surgeon a considerable number. But that was many years ago and he has forgotten all about it. He would not mind having a large number of necropsies to do, for then he could become proficient and remain so; but he regards the ordinary necropsy by a general practitioner under the most adverse circumstances, with no facilities and no skilled assistance, as a ghoulish farce which ought to cease. Once in a spasm of candor he stated at an inquest that he had not the slightest idea of the cause of death of the individual whose corpse he had mutilated. The coroner commended his honesty but pointed out that this was of no use for his returns and that if the physician could not give the exact cause of death he must give the most likely. He had found a few green peas in the stomach, and a few adroit questions from the coroner resulted in the solemn opinion being recorded that the deceased died of embarrassment of the heart caused by a surfeit of green peas. Morbid anatomy is a diffi-

cult and intricate art requiring constant exercise for its perfection. It is useless and unreasonable to expect any physician chosen at random to possess the requisite skill. The writer therefore advocates central mortuaries in the towns with facilities for necropsies by those whose training or inclination tends that way.

Importance of the Wet-Bulb Temperature

The sudden rise of temperature to an unusual height has been attended by a large number of deaths attributed to the heat. In a letter to the *Times,* Prof. J. S. Haldane points out that the usual record of shade temperature affords an imperfect measure of the effects likely to be produced on human beings by extremely hot weather. What matters, other things being equal, is not the air temperature but the wet-bulb temperature, since a person whose skin is kept normally moist in hot weather by perspiration is comparable to the bulb of a wet-bulb thermometer kept at body temperature by an internal source of heat. Just as with such a thermometer any effect of the air in cooling the skin is greatly reinforced by the cooling effect of evaporation and even with the air above body temperature, there may be a great net cooling effect. The cooling effect becomes less as the proportion of moisture in the atmosphere approaches saturation. Thus the wet-bulb temperature is the best measure of the effects produced on men by abnormally hot air. This fact is well known to mining engineers but does not seem to be familiar to meteorologists. Professor Haldane therefore suggests that in public records of hot weather the shade wet-bulb temperature be given as well as the shade temperature of the air.

PARIS

(From Our Regular Correspondent)

Aug. 27, 1930.

Respiration in an Atmosphere of Oxygen

While the benefits of inhalations of pure oxygen in cases of anhematosis appear assured, the treatment must be applied with caution. Dr. Bounhiol has shown, in experiments on animals, that when they live in a milieu too rich in oxygen they soon succumb to azotemia. If, at the start of the experiment, deep breathing is sharply carried on, the waste products of oxidation increase rapidly in the blood and disturb and retard more and more the new absorption of oxygen by the blood. The milieu then, in spite of the abundance of oxygen, loses rapidly its oxidizing capacity. The result is that animals become asphyxiated because they can no longer absorb oxygen, and succumb to intoxication, from the products of a too intense oxidation which they cannot eliminate with sufficient rapidity. The inference to be drawn is that the treatment of asphyxiated persons should never consist in the prolonged application, at atmospheric pressure, of mixtures the oxygen content of which exceeds from 40 to 50 per cent. Hence, it seems logical to conclude that one should not carry too far these inhalations of oxygen in subjects in a state of coma due to uremia or to diabetic acidosis, in order not to aggravate their state of azotemia.

Separation of Tuberculous Mothers from Their Infants

The best way to protect the child of a tuberculous mother against tuberculosis is to separate mother and child and raise the child in the country. There is in France an excellent society, founded forty years ago by Professor Grancher, which, by effecting this separation in transporting the new-born to a healthful rural environment, has rendered great service. All children that this society aided thus seemed logically doomed to die; but of the children placed out, only a small proportion became tuberculous. Such placement has always been optional. Many mothers are reluctant to separate themselves from their infants at first and often wait until a child is cachectic, when it is frequently too late. The discovery of the passage of the filtrable tuberculous virus from the mother to the fetus has rendered the question still more perplexing, and some persons have thought that, in the interest of preservation of child life, a law should be passed making such separation compulsory. Dr. Roux, president of the Grancher society, in a letter published in the press, has taken a strong stand against the proposal. He thinks that the B C G vaccine has sufficiently proved its value, so that, if administered to the new-born by mouth during the first week after birth, the child of a tuberculous mother can be left without danger in the home, if the parents prefer. No law making such separation compulsory should be passed.

Reduction in Tax on Physicians

The annual budget for France, which has just been adopted, provides for a number of slight reductions in taxes. The French taxpayer still remains, however, the greatest burden bearer in the world, from all appearances. Physicians pay a tax called *la patente,* which is paid by all persons who derive their income from any form of commercial relations with the general public. But the tax of a merchant or tradesman is figured on the amount of rent that he pays for his store or shop, whereas he does not pay any tax on the rent of his private domicile, which is ordinarily located elsewhere. In France, however, most physicians give their consultations in the apartment in which they reside. *La patente* has, therefore, in its application worked a hardship on physicians; for it has been applied unjustly to all the rooms of his apartment, including bedrooms. But as the result of unanimous action on the part of the medical syndicates, the physician will henceforth pay the special tax termed *la patente* only on such rooms as are used in connection with his profession; namely, his office and his laboratory. For the other rooms he will pay only the tax applicable to all citizens. In Paris and other large cities, this concession will constitute an appreciable reduction; for the rate of *la patente* is determined for each city by the municipal council, which may sometimes be led to demand from the imposition of this tax considerable sums to make up for the usual demagogic waste.

Association for Development of Medical Relations

At the recent meeting of the administrative council, Agrégé Professor Chiray was chosen to represent the Association pour le développement des relations médicales at the Congress of French-Speaking Physicians to be held in Montreal, while Professor Achard was delegated to represent the association at the Journées médicales de Bruxelles. For the benefit of foreign physicians who are not acquainted with the bureau of the association and with the services it is able to render, a leaflet has been sent to the various consulates. The Americans request that the courses in English be held in July rather than in October.

Vaccination of Cattle Against Tuberculosis

An experiment reported by Dr. Vaudremer to the Academy of Medicine appears to have advanced the question of vaccination of cattle against tuberculosis. Vaudremer found that the Vallée bovine tubercle bacillus, when cultivated on gelose and emulsified in physiologic solution of sodium chloride, if injected as a living organism under the skin or into the jugular vein in calves, does not produce tuberculosis but gives them the power to resist the intravenous injection of 4 mg. of virulent bacilli. These experiments show that animals, infected by a heavy dose, contract an active tuberculosis, but they recover from it. If, 231 days after the infection, the animals treated are killed, one finds that they present tuberculous lesions that are just about as serious as those observed in the controls of the experiment. On the other hand, those killed 354 days after the infection show traces of a retrogression of the disease; the active lesions have disappeared and frequently they have been replaced by cicatricial lesions. These protected, or immunized, animals can defend themselves against a heavy experimental infection and recover from it. These facts confirm the previous articles of the author, with respect to the biology of the tubercle bacillus

and the connection between the clinical forms of tuberculosis and the stage of development of the bacillus. These ideas, advanced by the author in 1923, have acquired greater credence since the researches of Sergent, Kourilsky, Benda and Durand, and, more recently, those of Calmette.

Liability for Articles Stolen from Waiting Rooms

A recent court decision makes a peculiar distinction with regard to the liability of the physician for articles belonging to clients, stolen from the waiting room. The articles most commonly taken are coats, furs, umbrellas and hats. Theft and the substitution of other articles, as the case may be, are of common occurrence, and not infrequently objets d'art are taken from the physician's private salon. According to the decision in question, the physician is liable when he has a domestic charged with opening the door; for on the domestic rests the obligation of guarding the articles deposed. But the physician is not personally liable when every one is able to come and go at will, as is the case in many clinics and dispensaries in populous sections of the city. If the physician is liable, his liability does not exceed 1,000 francs ($40), which is the sum fixed, under the same circumstances, with regard to owners of cafés, where articles classified by the law under the head of *dépôt nécessaire* (hats, coats, umbrellas) are removed or set aside.

Conference of Psychoanalysts

For the fifth time, a group of physicians who are specialists in psychoanalysis met at the psychiatric clinic of the Hôpital St. Anne in Paris, under the chairmanship of Dr. Charles Odiar. The attendance was not large and the discussions were confined to three papers. It was brought out that psychoanalysis as practiced by psychiatrists (and not as exploited by modern writers and their followers) sets itself up as the science of the subconscious—still young, to be sure, but nevertheless with all the rigor of rules and the impartiality of observation that should constitute the basis of every experimental science. Professor Hesnard and Dr. R. Laforgue read papers on autopunition in the psychology of the neuroses and psychoses. Madame le Dr. Morgenstern cited a series of observations made in the clinical annex of infantile neuropsychiatry at the Faculté de médecine de Paris. She cited a number of recoveries. Madame Marie Bonaparte presented a paper on psychoanalysis applied to pedagogy. The chief task of the psychoanalysts is to modify the methods of pedagogy by bringing them into close relation with modern scientific medicine. Modern pedagogy, as a whole, has many wrong conceptions of the psychophysiology of the development of the child brain. Many physicians think, however, that psychoanalysis may present dangers and produce effects just opposite of those expected. The congress was composed only of specialists convinced of the exalted position of psychoanalysis. There was consequently no one present to oppose what was said.

The Ollier Centenary

The centenary of the French surgeon Ollier was recently celebrated with appropriate ceremonies at Lyons. Ollier was born, Dec. 2, 1830, in the department of Ardèche, but his life work was done at the Faculté de médecine de Lyon. In his graduation thesis, published in 1856, he demonstrated that there is no specific cancer cell but that there are as many types of cancer as there are types of tissue. He specialized chiefly in the surgery of the bones and joints. While professor at the Faculté de Lyon, he served as chairman of the second French Congress of Surgery, held in Paris in 1886. He was well known in foreign countries, having been a member or correspondent of many learned societies. He demonstrated the regeneration of bone tissue when the periosteum is preserved, and his work "Traité des résections" became and has remained a classic. He was a skilful operator. The ceremonies, which brought together a large number of French and foreign surgeons at Lyons, were preceded by a visit to the new buildings of the Faculté de médecine and to the new Hôpital de la Grange-blanche. A formal session of the Société de chirurgie de Lyon was held. Patients on whom Ollier had operated were presented at this session, giving an opportunity to observe the excellence and the duration of the results that he had secured. Professor Texier presented resections of the shoulder and elbow; Professor Bérard resections of the wrist and the knee; Professor Patel resections of the hip. The museum of the history of medicine was then visited, in which a whole room is devoted to Ollier, containing anatomic specimens and observations on his patients, written by his own hand.

RIO DE JANEIRO

(From Our Regular Correspondent)

Aug. 15, 1930.

Parrots in Brazil in Relation to Psittacosis

Drs. G. Pacheco and O. Bier stated before the Sociedad de Biologia of São Paulo that the development of psittacosis among native parrots in Brazil may be explained, possibly as being due to the exacerbation of a disease existing in them in an attenuated form. Last year an epizootic similar to psittacosis developed in an aviary of the Bureau of Animal Industries. Bacteria isolated from the sick animals had many characteristics of Nocard's bacillus but had also some different characteristics, indicating that it was of the same type of bacillus but was not Nocard's bacillus itself. Nocard's bacillus was isolated, however, from two sick parrots which were not connected with the epizootic mentioned. A filtrable virus was isolated from these birds, which, when used in concentrated solutions, reproduced the disease in other parrots. However, contrary to observations made with the viruses isolated from cases of psittacosis in Europe and the United States, the virus isolated from those animals in Brazil was not pathogenic for laboratory animals, including chickens. More studies on the subject are going on.

Epidemic of Ringworm of the Scalp

Drs. O. da Fonseca and A. Simaõ Levy of the Laboratory of the Dermatologic Clinic, School of Medicine, Rio de Janeiro, state that Brazilian medical literature does not contain a report of an epidemic of ringworm of the scalp. In 1929 these workers studied an epidemic of ringworm of the scalp which began in a children's boarding school in the neighborhood of Rio de Janeiro. The beginning of the epidemic was insidious. About 150 children of the school had been exposed to infection, and when the workers visited the institution about 30 per cent of the children showed trichophytic lesions. They isolated the infected ones and proceeded to make a detailed clinical and microscopic examination of the children not yet contaminated. Every child in whom the disease made its appearance was isolated with the rest of the infected ones, and by these precautions they could check in the first days the course of the infection. No new cases were observed. The efficacy of isolation was shown by the rate of infection exhibited by the two different sections (boys and girls) of the school. Almost all cases were observed among boys. The fungus isolated from cultures of the scalp lesions in the group of boys was *Tricophyton violaceum,* while in the group of girls it was *Tricophyton acuminatum.* The extensive outbreak of infection among boys began with the admission to the home of a boy who brought the disease from his parents' home. Only three girls had ringworm of the scalp. Two of them had the infection when they arrived at the home from another institution. Among infected boys the classic lesions were found: many small patches and places where the infected hair was rarefied and short. In 10 per cent of the cases, limited lesions of trichophytic herpes circinatus, localized on the face, neck, back, abdomen and limbs, were observed. These lesions were highly erythematous and were encircled by squamous and vesiculous borders, somewhat thick and elevated. No interdigital lesions of the hands or feet were found.

JAPAN

(From Our Regular Correspondent)

July 9, 1930.

Birth Control in Tokyo

The Tokyo City Council opened a municipal birth control consultation office at Shiba Park last February. The chief physician, Miss Toyoko Ozaki, is a graduate of the Tokyo Women's Medical College. The new establishment has lately published statistics concerning birth control. More than 1,300 persons have come for consultation and more than 3,000 have written to ask for consultation, most of them living in the country. As to the number of children, 3 per cent had none; 37 per cent from one to three children; 53 per cent from four to seven, and 5 per cent from eight to ten. As to their living conditions, 21 per cent had a monthly income of 100 yen or more.

Infant Mortality

Dr. M. Tayuki, chief of the Osaka Branch of the Saiseikai Charity Hospital, has published the maternity statistics of that hospital. The materials for the statistics were taken only from married women 45 years of age or more whom he considered to be destitute. The material was taken from free clinics during the four years 1926-1929. The number of persons investigated was 1,020, of whom 100 were sterile. There were 148 premature births. Of the 5,275 births, 2,773 children were living; that is, 53.33 per cent were living. Sixteen births are the biggest number in one family, and twelve of those children were dead. The infant death rate in this country is higher than that of the countries in Europe. It may be presumed that most of these children died soon after birth or before 5 years of age.

Dental Caries

The educational ministry has made an investigation on tooth decay among primary school children and students of higher grades during the last ten years. The results show a remarkable increase in later years, especially among primary school children. In the year 1918 the proportion was 43.36 per cent in males and 44.63 per cent in females, while in 1928 it became 69.14 per cent in males and 61.66 per cent in females; the increase is 25.78 per cent in the former and 17.03 per cent in the latter. Tooth Caries Prevention Day was held throughout the country, June 3, under the auspices of the Japanese Association of Dentists. Pamphlets dealing with the importance of tooth hygiene and posters concerning the prevention of tooth caries were put up to make the public take notice of the teeth.

Scientific Specimens to Chinese Colleges

Last year Dr. Shimoda, professor in the Kyushu Imperial University, made an inspection journey to China and on visiting the medical colleges found that they were in great need of various scientific specimens. According to the professor's report, the foreign ministry of this country in cooperation with the pathologic institute of the university is going to contribute some sets of specimens to the colleges in China.

Personals

Delegates have been nominated to attend the eighth Congress of the Far East Association of Tropical Medicine, which will be held at Bangkok, Siam, December 7-11. They are Dr. S. Yamada, representing the government institute for infectious diseases, Dr. B. Tanabe, the imperial Japanese army, and Dr. N. Onodera, the Kyushu University, the several others will be appointed shortly.

Dr. S. Okada of the Tokyo Imperial University will fill the vacancy left by the death of Dr. S. Sakai, professor of internal medicine in the Nagoya Medical College.

Dr. Kitajima was renominated by the faculty meeting of the Keio Medical College to continue as dean of the college for the next term, and at the same meeting Drs. R. Kobayashi and G. Fujinami were elected to be directors.

Dr. B. Asakura, professor in the Tokyo Jikeikai Medical College, retired from his post and Dr. I. Watanabe has been appointed as his successor.

Professor Helter of the Osaka Medical College, who will return to his home in Germany at the expiration of his term, will be succeeded by Dr. G. Kozawa, who studied orthopedics in Dr. Sauerbruch's institute in Berlin University and is now an assistant professor of the college.

Dr. Tsurumi, who has been here on leave of absence, will go back to Geneva in the middle of August to be the permanent commissioner to the League of Nations.

ITALY

(From Our Regular Correspondent)

Aug. 15, 1930.

Status of Urology in Italy

In an address delivered before the Società italiana di urologia, of which he is president, Professor Lasio described the present status of urology in Italy. He said it was in a state of frank inferiority as compared with the development achieved in other countries. It is, generally speaking, entrusted either to so-called urologists *da catetere*, who with slight expenditure of time and study have acquired a superficial knowledge of instrumental diagnosis, or to general surgeons. There are a number of good specialists, but they are few compared with the need. The ideal specialist should have a thorough training in surgery and also be specially trained in urologic methods. Whereas urology is a required subject of instruction in almost all the countries of Europe and America, in Italy there is only one person charged with such instruction (Professor Lasio) and only one urologic clinic—at Milan. Only five hospitals (Trieste, Turin, Naples and Leghorn) are supplied with urologic apparatus, and in these hospitals there are scarcely 200 beds for urologic patients. The young physician who finishes his university course is not familiar with the urologic movement, and if he wishes to specialize in urology he is almost compelled to enter a foreign university. Lasio recommended that in every city of Italy a urologic division be established, with the formation of new hospital departments, in addition to enlarging and modernizing those already existing. According to the speaker, the formation of new departments would not mean that the general surgeon would lose all his urologic cases; but the acceptance of patients should be made with the idea of distributing them among the various surgical, general and specialized departments. This system has been in use more than twenty years in the Ospedale maggiore in Milan, and it has never given rise to inconvenience and has allowed the urologic division to develop normally, bringing up its capacity from 40 beds to 100 beds, while also the other surgical divisions have been able to deal with urologic types and to have an abundance of cases.

Regional Congress of Pediatrics

The Calabria chapter of the Società italiana di pediatria held recently its first regional congress at Cosenza. Professor Misasi presented a case of chloroma, and spoke at length on the clinical and pathologic characteristics. Only ninety-one cases have been recorded thus far in the literature. Considering in detail the hematologic manifestations of all known cases, Professor Misasi said that there is not any definite factor in the examination of the blood that fixes the diagnosis. In a specimen taken from one of the tumors in his case, he found certain differentiated cells of which he exhibited photographs. Similar cells were found by Professor Caronia. The author held that these cells support the diagnosis more than the examination of the peripheral blood. The etiology of this disease is still unknown. He compared it with leukemia and said that both may have a relation with malignant tumors.

Professor Cattaneo, chairman of the congress, who examined carefully the patient, holds also the opinion that chloroma belongs to the same type of disease as tumors.

Dr. Rodotà reported the results of his trials of the Dick method of serotherapy and prophylaxis in an epidemic of 500 cases of scarlet fever. He does not think favorably of serotherapy, even when employed early and used intensely, nor is he convinced of the value of vaccine prophylaxis, for of 400 persons vaccinated 47 contracted the disease, and in 5 cases it proved fatal. Dr. Stancati stated that he had observed personally in Bologna excellent results secured from the use of the Calmette vaccine. Professor Misasi emphasized that the subject of vaccine prophylaxis is interesting, and suggested that it be a topic on the program of the next congress. At the same time, he urged the colleagues to employ the vaccine extensively, in case of an epidemic, in order that many useful facts might be brought out at the next meeting.

Dr. Lo Passo, who spoke on "Cow's Milk and Tuberculosis Prophylaxis," suggested that the insurance of cattle be made compulsory, as it would aid in the crusade against tuberculosis. Professor Cattaneo questioned the utility of preventoriums, for, in order to apply the method consistently it would be necessary to build entire cities for the tuberculous. He considers vaccination the most economical method of tuberculosis prophylaxis.

Professor Misasi was elected president of the Calabria chapter. The topics selected for the next congress were malaria in children, and vaccine prophylaxis and vaccinotherapy.

The Otoneuro-Ophthalmologic Society

The Rome chapter of the Società italiana di oto-neuro-oftalmologia met recently under the chairmanship of Professor Di Marzio.

Prof. Giorgio Ferreri reported a case of fibrosarcoma of the nasopharyngeal cavity, the initial symptoms of which consisted of dizziness and disturbances affecting the fifth pair of cranial nerves. Following the diagnosis, roentgen treatment carried out in several cycles effected a clinical cure of the patient. The patient was still well four years after the treatment.

Dr. Panico discussed the value of functional examination of the labyrinth as an aid to diagnosis in the forms of incipient endocranial hyperpressure. He recalled that in serous meningitis there is a functional dissociation between the pars cochlearis (which is preserved intact or nearly so) and the pars vestibularis, which is only slightly sensitive or sometimes not at all sensitive to the rotatory test and to the heat test. The speaker is convinced that the initial intracranial manifestation may be ascribed to such behavior of the labyrinth, which possibly may be discovered even before the examination of the fundus oculi reveals the characteristic peripapillary edema. He has seen cases in which lumbar puncture revealed a slight hyperpressure of the spinal fluid but the fundus appeared still perfectly normal.

The Milk Central in Milan

In Milan a new milk distributing central has been established which, beginning operations with 80,000 liters of milk a day, has, in a short time, brought the daily output to 220,000 liters. The milk is supplied by rural stations located within a radius of 18 kilometers of the city and is collected by a special type of truck. Every cow stable, at the points of origin, must be provided with suitable equipment in order that, by means of refrigeration, the product may have keeping qualities. Before the milk is accepted by the central depository, it is subjected to a chemical analysis with a view to ascertaining chiefly the butterfat content but also possible changes due to special phases in the sexual life of the animals, or to improper feeding. After acceptance, the milk is weighed and subjected to the first filtration, which removes all foreign bodies of a certain size. The residual matter resulting from the first filtration weighs from 80-90 Kg. daily. Before it is heated, the milk is subjected to refrigeration at a temperature of 3 C. This temperature makes it resistant to the development of bacterial flora. After a preliminary heating at a temperature of 40 C. a second filtration and pasteurization follow, during which latter process an average temperature of 63 C. is maintained by means of a stream of hot water. This temperature is deemed sufficient for the destruction of pathogenic micro-organisms without changing the organized composition of the milk. The successive cooling takes place in three stages and utilizes the so-called heat-recovering process, which effects an economy of 50 per cent in fuel, or, for the city of Milan, of 200,000 lire ($10,000) a year. The distribution to the consumers is in bottles, which are thoroughly washed, provided with tight-fitting caps, and preserved in refrigerators.

A Hydrologic Convention

The Associazione di idrologia, climatologia e terapia fisica organized recently at Milan a hydrologic convention, which was attended by many physicians. Professor Devoto, director of the Clinica del lavoro at the University of Milan, discussed the modern conceptions concerning meteorology, climatology and physical geography, which constitute at present the scientific basis for climatic treatment. He recalled the recent studies of Dr. Del Duca who, in observations over a long period in a colony of weakly children, demonstrated the value of the climatic factor in their physical and mental development. Great importance attaches also to the refrigerating factor, based on the study, by means of temperature charts, of the cooling capacity of the atmosphere. Many foreign climatic resorts have been carefully studied on the basis of such criteria. In France and in Italy, little has been done in this field. Studies are, however, being carried on with reference to the hydroclimatologic station at Castellamare. Professor Devoto recalled also the importance of recent studies on the influence of the sirocco winds on certain types of eczema and on the diffusion of infectious diseases. Climatologic data have, therefore, importance for the explanation of morbidity curves.

Prof. Raffaello Nasini, senator, gave a paper on practical chemicophysical questions pertaining to Italian hydrologic resorts. He suggested the need of placing all mineral springs under the control of the Direzione generale della sanità pubblica and requiring periodic chemical and bacteriologic analyses of the waters.

BUDAPEST

(From Our Regular Correspondent)

Aug. 12, 1930.

International Organization to Combat Trachoma

The International Antitrachoma Organization, initiated at the ophthalmologic congress held last year in Amsterdam, was definitely constituted some days ago in Geneva, Switzerland. At the meetings in the spacious council hall of the palace of the League of Nations, twenty-one states took part, with forty delegates. Dr. Emile Grosz, professor of ophthalmology at the University of Budapest, presided and was elected president for the next five years. Dr. Olitsky of the Rockefeller Institute, New York, reported on the importance of the bacillus found by Noguchi. Special stress was laid on the promotion of friendly intercourse between the international members. Every sign points to the fact that the new organization will prove vital. The principles of the fight against trachoma were laid down in Hungary in 1866 and have been passed as a law. Since that time the antitrachoma organization in Hungary, thanks to the activity of Professor Grosz, has been perfected and has brought about a decrease in the morbidity rate from year to year. The antitrachoma fight in Hungary is exceeded in extension by Japan only, where there are 1,000 trachoma dispensaries with 1,000 trachoma specialists, who treat 500,000 trachoma patients yearly. In Hungary the vigorous campaign against trachoma resulted in a considerable decrease of the number of cases. In some districts where trachoma was prev-

alent, the disease is now extinct. There are districts where, despite the greatest efforts, the disease still remains. In Szeged, the second largest city in Hungary, the capital of the Hungarian Lowland, recently 1,300 trachoma cases have been reported, while in the adjacent farms and estates there are about 900 cases. In view of the insufficient number of physicians to treat these cases, the district health magistrate proposed to the ministry of public welfare that the teachers of the district be trained in the treatment of trachoma. The minister was not agreeable to this plan, as the expense connected with the special courses for teachers would be greater than that of appointing ten competent trachoma physicians. Measures were taken to start work immediately.

The Cerebral Localization of Musical Talent

Dr. Stephan Somogyi, lecturer to the University of Budapest, made histologic examinations on the brains of two highly gifted musicians: one a young violinist, killed in an automobile accident, the other a prominent opera singer. In both, he found that the more intensive development of the cortical areas was identical with that established by Guszmann, Auerbach and Klose on the brains of musical prodigies. The especially well developed cortical areas were the middle part of the left upper temporal gyrus, the lower part of the left parietal lobe, and the same areas on the right side, though not so much. In both cases Broca's gyrus showed extraordinary development. He localizes the sensory musical center in the middle third of the upper temporal gyrus, although the rôle of the right side cannot be excluded. In his opinion, the tremendous development of these areas is hereditary and ought not to be attributed to hypertrophy. The material substrate of musical talent of a high order is to be sought in the more intensive evolution of these cortical areas. There are no two identical human brains. The differences among average men may be slight, but prodigies, or those who have extraordinary talents, greatly differ from the normal, as was shown in the two cases investigated.

The Angioneuroses Which Follow the Intravenous Administration of Arsphenamine

Dr. Joseph Selley observed that the cases in which the administration of arsphenamine was followed by a painful attack of angioneurosis, consisting of excessive paleness and intensive abdominal pain, were mostly in patients who suffered from tabes. He searched for the cause of this phenomenon and concluded that it was an anaphylactic phenomenon. The most simple explanation is that the arsphenamine, which gets into the blood stream, causes endothelial irritation, and this elicits angiospasm and this again reflexly causes splanchnic irritation, which is connected with intense pain. Why do these symptoms occur just in tabetic patients? His answer is that tabetic patients are more sensitive to chemical and physical stimuli. Venereologists often observe that arsphenamine exaggerates at the outset all kinds of lancinating pains. The symptoms of cyanotic angioneurosis point to the irritation of the parasympathetic system, and this is confirmed also by the efficaciousness of medication with epinephrine. Sensations of pain are mediated solely by the sympathetic fibers. Accordingly, the pharmacodynamic action of arsphenamine is not strictly elective, as is that of epinephrine or atropine, but it attacks now the sympathetic and again the parasympathetic system, as does nicotine.

The Porges-Pollatschek Reaction

In view of the complicated technic of the Zondek-Aschheim test, which is the most reliable method, the Porges-Pollatschek reaction is likely to become popular in general practice. The reaction is based on the fact that the skin of pregnant women is considerably less sensitive against the hormone of the anterior lobe of the hypophysis than is the skin of nongravid women. Dr. Louis Goczy, lecturer to the University of Budapest, who tried this method, found that false results were obtained in seven out of thirty cases of pregnancy and in nine out of thirty nongravid cases. He asserts that the Porges-Pollatschek method is inapt for the establishing of gravidity.

BERLIN

(From Our Regular Correspondent)

Aug. 25, 1930.

Tuberculosis Convention in Hamburg

As a prelude to the International Tuberculosis Congress in Oslo, a tuberculosis convention was held, August 7-8, in Hamburg, in the Eppendorf Krankenhaus. Well known foreign specialists took part in the convention, which was under the chairmanship of Professor Ziegler of Hanover: Professor Fontes, Rio de Janeiro; Dr. Mahr, New Haven; Dr. Petroff, New York; Dr. Vaudremer, Paris; Prof. Pla y Armengol, Barcelona; Dr. E. L. Opie, Philadelphia, president of the American Tuberculosis Society; Professor Arima, Osaka, and Maragliano, Paolucci and Orelli of Italy. Two topics discussed have general interest. The so-called Gerson diet in tuberculosis was rejected by Professors Brugsch of Halle and Wichmann of Hamburg, and others. Individualized treatment, and not treatment according to a set schedule, was recommended. A changing of the blood reaction over a long period is impossible without inflicting harm to the organism. The clinical experiences with the Gerson diet in tuberculosis of the skin have not led to unequivocal results. Dr. Curschmann of the Eleonoren Sanatorium, showed by means of lantern slides the mode of action of this dietetic therapy in tuberculosis of the bones and in pulmonary tuberculosis. The results are not essentially better than with ordinary sanatorium diet, provided it is carried out consistently. During the discussion, Professor Lichtwitz of Altona warned against an optimistic attitude toward the introduction of forms of diet for which there is no definite theoretical basis. From the papers presented it appeared that the Gerson diet might, to be sure, exert a favorable influence but that it had not value unless it was individualized and the patients were kept under close medical supervision. Its application by laymen might be dangerous, as, in fact, has been shown in actual practice.

Considerable time was devoted to consideration of the mutability of the tubercle bacillus. The subject was introduced by Professor Fontes of Rio de Janeiro, who stated that the tubercle bacillus passes through a definite developmental cycle, as a number of other bacteria are known to do. In its development it passes through forms that were described by Much of Hamburg twenty-five years ago; in addition, there are said to be ultravisible forms. Dr. Petroff of New York reported that he had succeeded in splitting strains of tubercle bacilli into two externally different types of bacilli, which produce also different pathologic symptoms in animals. Experiments were reported by Dr. Mahr of New Haven, who succeeded in changing genuine tubercle bacilli into entirely harmless bacteria. The speaker stated that he had been able to refute the statement of Calmette that a strain of tubercle bacilli could never be brought to assume the qualities of para-tubercle bacilli.

The next important paper on the program was that of Professor Schürmann of Berlin, who discussed the "Modes of Infection in Tuberculosis," on the basis of observations in ingestion tuberculosis in infants. He confined himself to observations in the Lübeck cases, which he, among others, was called on by the federal government to investigate. The examination of his forty cases was not yet complete, so he restricted his remarks to the present status of the investigation. He emphasized that ingestion tuberculosis produced changes in the small intestine and infections of the buccal cavity. Not all the cases could be recognized with absolute certainty as examples of ingestion tuberculosis; but 52 per cent were definitely shown to belong to that category. In a few cases, infections of the middle ear were observed.

A Depository for Serums

In Breslau a special depository for serums has been created. The purpose is to establish distributing centers at which (also Sundays or during the night) serums that are not commonly kept in stock in the pharmacies may be obtained in emergency cases.

A Traveling Hygienic Museum

The international health service of the Deutsches Hygiene-Museum has prepared a traveling exhibit, installed in an autobus, which will be shown in rural districts. Models, films and lantern slides will be utilized. A large tent is carried for the protection of the exhibit and the audience. Inquiries for such traveling exhibits have already been received from China, India, North and South America, various Balkan states, the northern countries, and Russia.

Napoleon Was Not Epileptic

In an article in the *Deutsche medizinische Wochenschrift* (number 25), Friedrich M. Kircheisen, an authority on Napoleonic biographic data, subjects to a critical investigation the supposed evidence for the alleged epileptic disease of Napoleon I. The first person to spread the story that Napoleon had epilepsy was one Lewis Goldsmith, who, in 1810, published a widely circulated lampoon in which he asserted that the emperor, during a visit of his lady-love the actress George, had had a sudden attack of epilepsy. While one need attach no authority to this statement of an unreliable pamphleteer, the statement of a court lady, under date of Sept. 10, 1804, Koblenz, which is published in the memoirs of the *valet de chambre* Konstant, and which reads: The emperor had last night "a severe nervous shock or epileptic attack, to which he is subject," carries more weight. But Konstant himself, who was for many years closely associated with Napoleon, maintains, in an appended note, that the emperor had never had epileptic attacks. The statement of Talleyrand is most frequently cited. In his memoirs he states that, just before the beginning of the Austrian campaign, in September, 1805, he had dined one evening with the emperor, after which the emperor had retired to the room of the empress. "After the lapse of a few minutes," he continues, "Napoleon came out of her room, took me by the arm and led me into his study. Just about that time, Rémusat, the first *valet de chambre*, entered. We had scarcely entered his study when the emperor fell to the floor. He just barely had time to call to me to close the door. I opened his cravat, as he appeared to be choking. He did not vomit but moaned and driveled. Rémusat handed him water and I poured eau de cologne over him. He had a species of convulsions, which ceased after a quarter of an hour." Kircheisen regards this last report as likewise highly improbable; for Talleyrand is known to have been anything but fastidious as to the truth of his stories, and it is alleged that the memoirs published under his name are, as a matter of fact, a creation of Bacourt. To be sure, the story is told also by the wife of Rémusat, in her memoirs, which she wrote as reminiscences. But this source is no more reliable than the preceding. If Napoleon had actually suffered from epilepsy, there would have been repeated attacks. But not one of the many secretaries and other persons who were in daily contact with Napoleon make any such charges. On the other hand, Bourrienne, who, when he had fallen from favor, had no reason to spare Napoleon, states in express terms: "Many persons have asserted that Napoleon was subject to epileptic seizures. During the eleven years that I was constantly at his side, I never saw the slightest sign of the disease. On the contrary, Napoleon enjoyed excellent health." Of the many physicians who attended the emperor, not one ever observed an attack that could be termed epileptic. Kircheisen therefore concludes that Napoleon did not have epilepsy.

Marriages

JOHN J. MAYERCIK, Danbury, Conn., to Miss Frances V. Lebowich of Deep River, in Bridgeport, August 18.

GUSTAV RICHARD LAUBE, Cleveland, to Miss Helen Josephine Romig of Bethlehem, Pa., August 30.

WILLIAM LLOYD KENNY, Chicago, to Miss Genevieve Mary Crockett of Beloit, Wis., August 30.

JOHN W. CONWAY, Morganfield, Ky., to Miss Clema Lawson in Mount Vernon, Ind., August 14.

JAMES M. CAMERON, Altoona, Pa., to Miss Dorothy Darrough of Indianapolis, August 30.

LAWRENCE MARTIN ROBROCK, Indianapolis, to Miss Mildred Miller of Milford, June 25.

THOMAS W. MILLER, Alton, Ill., to Miss Marie Huschle of East St. Louis, June 26.

IRA E. PERRY, North Manchester, Ind., to Mrs. Fairy Smith of Huntington, June 16.

HOWARD D. GILES to Miss Estelle Blue, both of Columbus, Ohio, June 23.

DAVID E. MEIER to Miss Mary Seyller, both of Bradford, Ill., June 21.

CHARLES F. COOPER, Perry, Ga., to Miss Elizabeth Standard in June.

Deaths

Charles O'Hagan Laughinghouse ⊕ Raleigh, N. C.; University of Pennsylvania School of Medicine, Philadelphia, 1893; since 1911 member and, since 1927, secretary of the North Carolina State Board of Health and state health officer; past president of the Medical Society of the State of North Carolina and the North Carolina Board of Medical Examiners; served during the World War; coroner and superintendent of health for Pitt County; aged 59; died, August 26, in the High Point (N. C.) Hospital, of heart block, as the result of embolism.

Frank Thomas Fort ⊕ Louisville, Ky.; Louisville Medical College, 1895; member of the American College of Surgeons and the Southern Surgical Association; at one time professor of practical anatomy and operative surgery at his alma mater; served during the World War; formerly on the staffs of SS. Mary and Elizabeth Hospital and the Kosair Crippled Children's Hospital; aged 59; died, August 20, in Atlantic City, N. J., of chronic myocarditis.

Henry Beeckman Delatour ⊕ Brooklyn; Medical Department of Columbia College, New York, 1887; member of the American Surgical Association and the American College of Surgeons; formerly clinical professor of surgery, Long Island College Hospital; on the staffs of St. John's, Norwegian and Methodist Episcopal hospitals; served during the World War; aged 64; died, August 23, in the American Hospital, Paris, France, of sepsis.

Cyrus Newton Callander, Fargo, N. D.; Trinity Medical College, Toronto, Ont., Canada, 1897; member of the North Dakota State Medical Association, and the American College of Surgeons; formerly on the staffs of St. John's Hospital and St. Luke's Hospital; on the advisory editorial staff of the *Journal of Bone and Joint Surgery;* aged 65; died, July 30, of heart disease.

James Francis Aitken, New York; Bellevue Hospital Medical College, New York, 1883; for many years on the staff of the New York Skin and Cancer Hospital; aged 79; died, August 3, in the Bellevue Hospital, as a result of stricture of urethra and calculus of prostate.

Tipton McLemore, Nevada, Mo.; Missouri Medical College, St. Louis, 1897; member of the Missouri State Medical Association, and the American Academy of Ophthalmology and Oto-Laryngology; aged 58; died, July 30, in Moberly, of tumor of the spinal cord.

Robert Vincent Gallagher ⊕ Battle Creek, Mich.; College of Physicians and Surgeons, Chicago, 1902; past president of the Calhoun County Medical Society; served during the World War; aged 59; died, August 22, of cerebral embolus and chronic myocarditis.

Alden Russell Newhall, Holliston, Mass.; Dartmouth Medical School, Hanover, N. H., 1902; member of the Massachusetts Medical Society; on the staff of the Framingham (Mass.) Union Hospital; aged 55; died, August 15, of heart disease.

Archibald C. Forman ⊕ Bayonne, N. J.; Medical Department of the University of the City of New York, 1895; formerly health officer of Bayonne; on the staff of the Bayonne Hospital; aged 65; died, August 20, of cardiovascular disease.

Erlo H. Gray, Rochester, N. Y.; Medical Department of the University of the City of New York, 1884; member of the Medical Society of the State of New York; aged 70; died, July 19, of cerebral hemorrhage and arteriosclerosis.

Charles Chester Hubly ⊕ Battle Creek, Mich.; American Medical Missionary College, Chicago, 1904; on the staff of the Battle Creek Sanitarium; aged 52; died, August 21, of coronary thrombosis, arteriosclerosis and myocarditis.

Edward L. Gilbert ⊕ Electric Mills, Miss.; Memphis (Tenn.) Hospital Medical College, 1902; medical superintendent of the George C. Hixon Memorial Hospital; aged 54; died suddenly, August 13, of heart disease.

Alfred Silas Ambler ⊕ College Point, N. Y.; Long Island College Hospital, Brooklyn, 1893; formerly coroner; for many years on the staff of the Flushing (N. Y.) Hospital; aged 62; died, July 25, of endocarditis and nephritis.

Harry C. Robinson ⊕ Nampa, Idaho; Medical College of Ohio, Cincinnati, 1893; past president of the Canyon County Medical Society; on the staff of the Mercy Hospital; aged 67; died suddenly, August 20, of heart disease.

Ross Steele Weyer, Orting, Wash.; College of Physicians and Surgeons, Chicago, 1905; member of the Washington State Medical Association; aged 52; died, June 30, in the Puyallup (Wash.) Valley Hospital, of pneumonia.

William Joseph Say, St. Louis; Missouri Medical College, St. Louis, 1895; member of the Missouri State Medical Association; aged 70; died, August 27, in the U. S. Veterans' Hospital, Jefferson Barracks, of sclerosis.

Z. M. Kempton Fulton ⊕ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1893; on the staffs of St. Mary's and St. Christopher's hospitals; aged 62; died, August 8, of heart disease.

Osborn Moore Turner, Jackson, Miss.; Medical Department of the Tulane University of Louisiana, New Orleans, 1892; aged 61; died, July 29, of cirrhosis of the liver and acute dilatation of the heart.

Arthur John Berkheiser, Shenandoah, Pa.; Medico-Chirurgical College of Philadelphia, 1906; member of the Medical Society of the State of Pennsylvania; aged 49; died, August 29, of diabetes mellitus.

Clarence H. Kay, Springfield, Ohio; Miami Medical College, Cincinnati, 1882; member of the Ohio State Medical Association; aged 73; died, August 24, of diabetes mellitus and chronic myocarditis.

Stephen Harman, Smithville, Miss.; Memphis (Tenn.) Hospital Medical College, 1893; member of the Mississippi State Medical Association; aged 67; died, in August, of cerebral hemorrhage.

John Fletcher Shirley, Honea Path, S. C.; University of Maryland School of Medicine, Baltimore, 1883; member of the South Carolina Medical Association; aged 69; died, August 19, of heart disease.

Charles John Gabriel, Newark, N. J.; Columbia University College of Physicians and Surgeons, New York, 1901; aged 55; died, August 12, of atrophic cirrhosis of the liver and arteriosclerosis.

Frederick T. Dale, Depauville, N. Y.; College of Physicians and Surgeons, Baltimore, 1888; aged 71; died, June 23, in Clayton, of cerebral hemorrhage, arteriosclerosis and locomotor ataxia.

Eugene Hart ⊕ St. Johns, Mich.; Michigan College of Medicine and Surgery, Detroit, 1894; past president of the Clinton County Medical Society; aged 58; died, July 26, of myocarditis.

James Woodie Basham, Hamilton, Miss. (licensed, Mississippi, 1903); aged 53; died, August 10, in the Methodist Hospital, Memphis, Tenn., of hemorrhage due to perforated peptic ulcer.

Francis D. Miller, Jacksonville, Fla.; College of Physicians and Surgeons, Baltimore, 1882; veteran of the Spanish-American War; aged 69; died, August 3, in Chattahooche, of chronic myocarditis.

Hugh Samuel Alexander, Belleville, Pa.; Baltimore University School of Medicine, 1891; member of the Medical Society of the State of Pennsylvania; aged 62; died, June 21, of nephritis.

David I. Blanford, Kansas City, Mo.; University Medical College of Kansas City, 1903; member of the Missouri State Medical Association; aged 56; died, August 8, of carcinoma of the liver.

Robert Horace Brooks, Rome, Ga.; Leonard Medical School, Raleigh, N. C., 1906; aged 50; died suddenly, July 30, in Hot Springs National Park, Ark., of heart block.

John S. Kloeber, Selah, Wash.; University of Maryland School of Medicine, Baltimore, 1886; aged 65; died, July 15, in Yakima of carcinoma of the liver and sigmoid.

Victor Painchaud ⊕ Klotzville, La.; Laval University Faculty of Medicine, Quebec, Que., Canada, 1902; aged 52; died, in June, of typhoid fever and acute nephritis.

Jack M. Bates, Canton, Ga.; Southern Medical College, Atlanta, 1890; member of the Medical Association of Georgia; aged 60; died, June 26, of carcinoma.

Jacob Sidney Black, De Soto City, Fla.; Baltimore Medical College, 1892; postmaster of De Soto City; aged 62; died suddenly, in July, of heart disease.

Walter M. Burckhalter, Comer, Ga.; University of Georgia Medical Department, Augusta, 1899; aged 60; died, March 18, of cholecystitis and cholelithiasis.

Adolphe Alphonse Auger, Jamaica, N. Y.; University of Buffalo School of Medicine, 1887; aged 71; died, July 17, of myocarditis and arteriosclerosis.

Oscar Edwin Bloom, Akron, Ohio; Ohio-Miami Medical College of the University of Cincinnati, 1910; aged 51; died, August 17, of heart disease.

Howard James Evans, Sunbury, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1896; aged 71; died, August 13, of heart disease.

Morton Monroe McCord, Okarche, Okla.; Chicago College of Medicine and Surgery, 1909; aged 48; died suddenly, August 3, of heart disease.

Walter G. Benedict ⊕ Canisteo, N. Y.; Eclectic Medical Institute, Cincinnati, 1891; aged 72; died, April 23, in Wellsville, of bronchopneumonia.

Merritt G. Bassett, Grand Rapids, Mich.; University of Michigan Medical School, Ann Arbor, 1890; aged 62; died, August 5, of heart disease.

Adelia A. Rohn, Defiance, Ohio; Eclectic Medical Institute, Cincinnati, 1879; aged 84; died, August 17, of heart disease and cerebral hemorrhage.

Weeden C. Miller, Baird, Miss.; Hospital College of Medicine, Louisville, 1883; aged 74; died, July 16, in Columbus, of cirrhosis of the liver.

William Herschel Davis, Castle, Okla.; Beaumont Hospital Medical College, St. Louis, 1893; aged 61; died, July 14, of cerebral hemorrhage.

John Milton Miller, Clyde, Texas; Medical Department, University of Tennessee, Nashville, Tenn., 1904; aged 63; died, March 29, of paralysis.

Daniel Webster Sherrod, Meridian, Miss.; Meharry Medical College, Nashville, Tenn., 1896; aged 68; died, August 9, of cerebral hemorrhage.

Amedee Raymond Melanson, Eel Brook, N. S., Canada; Dalhousie University Faculty of Medicine, Halifax, 1906; aged 47; died, May 8.

James M. Johnston ⊕ Huntingdon, Pa.; College of Physicians and Surgeons, Baltimore, 1896; aged 68; died, May 5, of cerebral hemorrhage.

Elias Alexander Henson, Benton, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1890; aged 87; died, July 30, of senility.

Mitchell Castlio, Hamburg, Mo.; St. Louis Medical College, 1883; aged 77; died, March 22, in a hospital at St. Charles, of pneumonia.

William John Davies ⊕ Fremont, Neb.; Rush Medical College, Chicago, 1887; aged 68; died, August 22, of pulmonary carcinoma.

Patrick A. Gordon, Columbus, Ohio; Medical College of Ohio, Cincinnati, 1880; aged 77; died, August 29, of diabetes mellitus.

Frank Arthur Swezey ⊕ Wakonda, S. D.; Rush Medical College, Chicago, 1894; aged 59; died, August 11, of heart disease.

Frank Alden Hudson, Buffalo, Mo.; Barnes Medical College, St. Louis, 1893; aged 60; died, June 1, of bronchiectasis.

John Wilson, Humboldt, Kan.; Rush Medical College, Chicago, 1882; aged 80; died, April 29, of acute nephritis.

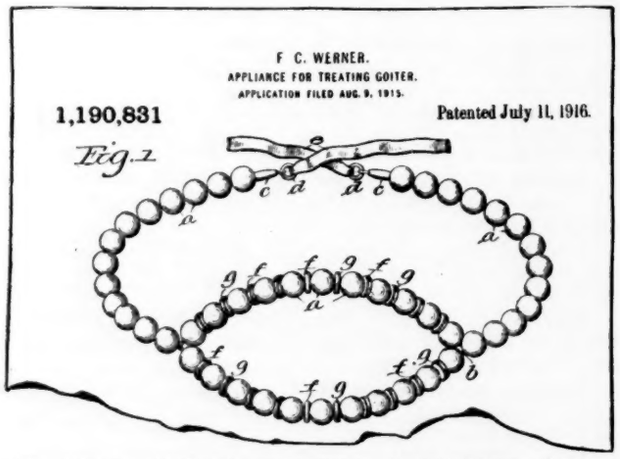
Bureau of Investigation

THE GALVANO NECKLACE FRAUD

The Alleged Goiter Cure of the Cosmas Pharmacal Company Debarred from the Mails

On July 11, 1916, one branch of the United States government —the Patent Office—issued a patent on a preposterous piece of unscientific hokum, on the ground that it was a "new and useful improvement in appliances for treating goiter." On August 14, 1930, another branch of the government—the Post Office Department—declared the same device worthless and its method of exploitation a fraud and debarred it from the mails!

The device was known as the "Galvano Necklace" or "Galvano Goiter Appliance"; it was sold by the Cosmas Pharmacal Company of Watertown, Wis. Originally, the chief officer of the Cosmas Pharmacal Company was Frederick C. Werner, the patentee of the device. Werner, when alive (he died in 1924), was president, manager, director and "Consulting Physician" of the Cosmas Pharmacal Company. In those days, those who answered the company's advertisements received a letter signed "F. C. Werner, M.D., Consulting Physician," stating that the letter had been referred to Werner by the company. Thus one visualizes the late F. C. Werner receiving a letter in his capacity as president and manager of the company and



The "Galvano Necklace" as illustrated in specifications of Patent No. 1190831 issued by the United States government on an alleged "new and useful improvement in appliances for treating goiter." The same government now declares it a fraud.

gravely referring it to himself in his capacity as consulting physician. The entire scheme was exposed in this department of THE JOURNAL, December 8, 1923.

The Galvano Necklace consists of glass beads between which are placed alternately small zinc and copper discs. Both the discs and beads are strung on a piece of fine wire. The alleged purpose of the "invention" is that of "generating galvanic currents in contact with the skin in the presence of mercurous iodide and calcium chloride." With the necklace came an ointment containing mercurous iodide and calcium chloride, which was to be applied to the skin of the neck, and the necklace then hung so that that part carrying the zinc and copper discs would come in contact with the anointed skin. As THE JOURNAL stated at the time of its original article:

"As an adornment it would fail to find a purchaser if offered in competition with the 'jewelry' of the five-and-ten-cent stores. As a therapeutic device it ranks with a string of wampum."

The price charged for this nostrum has varied. When first put on the market it was $3.50; in 1916 it was $5.00; later, it was $7.50, the price still charged for it.

After Frederick Werner's death, there was a change in the officers and directors, but it still seems to have stayed in the Werner family. At the time that THE JOURNAL first published on the subject, Margaret Werner, apparently a daughter of Frederick C. Werner, was secretary, treasurer and director. Miss Werner is now Mrs. Goecke but still seems to be the manager of the business. The "advertising manager" is Mr. Fred Werner, the son of Dr. Frederick Werner, deceased.

Of recent years the Cosmas Pharmacal Company seems to have recognized that its necklace and ointment would be wholly inert, so far as having any action on the thyroid gland is concerned, as the company, in addition to the "ointment," has been sending out ½ grain potassium iodide tablets. The danger of allowing people with hyperthyroidism to dose themselves with potassium iodide unknowingly, is not obvious to the public although it is to physicians.

In April of this year, the Post Office Department notified the Cosmas Pharmacal Company to show cause why a fraud order should not be issued against them. A hearing was held in Washington in July. The hearing brought out little that was not given to the profession in THE JOURNAL'S article of 1923, except the facts relative to the potassium iodide tablets, which were not used at that time. It did show that the necklace, when carefully tested in the Bureau of Standards with an electrical device so sensitive as to record an electric current of one-ten millionth of an ampere, failed to disclose any electric current!

The memorandum to the Postmaster General from Judge Horace J. Donnelly, Solicitor for the Department, recommending the issuance of a fraud order, mentions the fact that the Galvano appliance itself is manufactured in Watertown, that the ointment is made by a concern in Milwaukee (name not given), and that the tablets were made by Sharp and Dohme. The Solicitor recommended the issuance of a fraud order, after considering all the evidence in the case, and on August 14, 1930, Postmaster General Walter F. Brown issued such an order against the Cosmas Pharmacal Company, W. Werner, and their officers and agents, as such.

MORE MISBRANDED NOSTRUMS

Abstracts of Notices of Judgment Issued by the Food, Drug and Insecticide Administration of the United States Department of Agriculture

Hollie's Reducing Crackers.—The Cubbison Cracker Company, Inc., Los Angeles, shipped in March, 1929, to Oregon a quantity of Dr. Hollie's Reducing Crackers which were declared adulterated and misbranded. The federal chemists reported that the product was essentially a brown wheat cracker containing senna and mineral oil. The preparation was declared adulterated because, considered as a food, the mineral oil and senna had been substituted in part for the food product and the senna might have rendered it injurious to health. It was misbranded because the claim that the preparation would reduce weight was declared false and fraudulent. In June, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16531; issued March, 1930.*]

Cold Fix Tablets.—The Cold Fix Company, Newark, N. J., shipped in August, 1928, into the state of New York a quantity of laxative Cold Fix Tablets that were declared misbranded. The federal chemists reported that analysis showed the tablets to contain about 1 grain of acetanilide (each), with some cinchonine sulphate, aloin and camphor. The curative claims, that it was a remedy for influenza, colds with constipation and headache, etc., were declared false and fraudulent and in March, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16397; issued December, 1929.*]

Campho-Quinine.—The Gordon Remedy Company of Shelbyville, Ill., shipped in January, 1929, to Missouri a quantity of Campho-Quinine that was declared misbranded. The federal chemists reported that analysis showed the Campho-Quinine tablets to consist essentially of acetanilide (about 1¼ grains to the tablet), with a small amount of a quinine salt, camphor and an extract of a laxative plant drug. The product was declared adulterated in that the amount of quinine in Campho-Quinine was insignificant; it was also declared adulterated because the

amount of acetanilide declared did not correspond to the amount present. The therapeutic claims, to the effect that the tablets were a cure for influenza and malaria, were declared false and fraudulent. In May, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16380; issued December, 1929.*]

Fluin.—The Fluin Company of New York City in January, 1929, shipped to Connecticut a quantity of Fluin that was held to be misbranded. The Bureau of Chemistry reported that analysis showed it to consist essentially of camphor, amidopyrine and a compound with a hexamethylenetetramine nucleus. The claims on the package, that the product was absolutely harmless and contained no harmful ingredients, were declared false and misleading, while the claims that it was an effective treatment for influenza and would prevent pneumonia were declared false and fraudulent. In March, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16382; issued December, 1929.*]

Ampco Laxative Cold Tablets. — The American Drug Sales Company, Boston, Mass., shipped into New Hampshire in November, 1928, a quantity of Ampco Laxative Cold Tablets that were declared misbranded. The federal chemists reported that the tablets were found to contain 1 grain of acetanilide each, together with red pepper and an extract of a laxative plant drug. The product was first declared misbranded because the quantity or proportion of the acetanilide in the tablets was not stated; furthermore, the therapeutic claims, to the effect that it was a remedy for influenza and malaria, were declared false and fraudulent. In May, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed. — [*Notice of Judgment 16400; issued December, 1929.*]

Forkola Jell. — The Bacorn Company of Elmira, N. Y., shipped in November, 1928, into Pennsylvania a quantity of Forkola Jell that was held to be misbranded. The government chemists reported that it was an ointment consisting essentially of a petrolatum base containing benzoin and oils of peppermint, eucalyptus, with camphor, menthol, turpentine oil and oil of wintergreen. The claims that the product would relieve and cure spasmodic croup, nasal catarrh, bronchitis, whooping cough, etc., were declared false and fraudulent, and in June, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16538; issued March, 1930.*]

Casco Cascara Bromide Quinine Laxative Tablets.—The Casco Company of Canton, Ohio, shipped in January, 1929, into Missouri a quantity of Casco Cascara Bromide Quinine Laxative Tablets that were declared misbranded. When analyzed, the tablets were found to contain acetanilide, phenolphthalein, quinine, extracts of plant drugs including a laxative drug and a trace of bromide. The product was declared misbranded, first, because the amount of acetanilide declared was incorrectly stated; further, the claim that the product was a remedy for influenza was declared false and fraudulent. In June, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16529; issued March, 1930.*]

Yago One Day Cold Tablets.—The L. J. Barnett Company of Des Moines, Iowa, shipped in August, 1928, to California a quantity of Yago One Day Cold Tablets that were declared misbranded. The product on analysis was found to consist essentially of acetanilide, a quinine compound, resins, aloin, extracts of plant drugs, including a laxative drug, and traces of mydriatic and ipecac alkaloids. The curative claims to the effect that it was a remedy for influenza were declared false and fraudulent, and in June, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed. — [*Notice of Judgment 16536; issued March, 1930.*]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

SCANZONI MANEUVER

To the Editor:—I would be pleased if you would briefly explain the technic of the Scanzoni maneuver. I have before me Harper's Clinical Obstetrics but simply cannot comprehend the meaning of the text or illustrations of this technic. He says the forceps must not rotate about the handles as an axis and I cannot understand how the head can rotate into the anterior position without rotation of the handles. He says this must not be done on account of possible injury to the vaginal walls. Please do not publish my name in THE JOURNAL. M.D., Michigan.

ANSWER.—By the Scanzoni maneuver is meant the double application of the forceps blades for the delivery of an occiput posterior position. When forceps are applied correctly for an occiput anterior position, the pelvic curve of the forceps looks toward the baby's occiput, which rests under the symphysis pubis. However, when the Scanzoni maneuver is to be performed the occiput rests on the sacrum. In the first application, the blades of the forceps are applied so that their pelvic curve looks toward the baby's face, which is under the symphysis pubis. The left blade is inserted first on the left side of the mother after two or more fingers of the right hand have been inserted into the vagina to guide the blade into place. Then in a similar manner the right blade is inserted into the right side of the mother's pelvis. The blades are locked and downward traction is made until the head rests on the pelvic floor. Then the occiput is brought around to the symphysis. Bill points out that it is much better to rotate the head in the station in which it lies and not after it is pulled down to the pelvic floor, because the aim of this part of the maneuver is to correct the abnormal position but not to advance the head. The correct method of bringing the occiput to the front is accomplished by rotating the forceps in such a way that the handles describe a large circle during the rotation. If the handles are simply twisted around their own long axis, extensive damage may result. This is the damage to which Harper refers. In De Lee's Text Book of Obstetrics, ed. 5, p. 1040, are two illustrations which show the difference between rotating the forceps in a circle and simple twisting.

After the occiput has been brought round to the symphysis, the head should be pulled downward to fix it in its new position. The blades, which are now upside down, are removed and reapplied in such a way that the pelvic curve looks toward the baby's occiput. In reapplying the blades it is best to insert the posterior blade first, because usually the occiput does not remain exactly in the midline but has a tendency to slip back somewhat. After the second blade is inserted, it will be necessary to manipulate the blades before they can be locked. When performing the Scanzoni maneuver, it is most helpful to lubricate the vagina thoroughly with green soap.

ACNE ROSACEA — ELASTIC BELTS

To the Editor:—1. What is the latest and most approved treatment of acne rosacea? 2. Will plastic surgery modify or improve a large bulbous red nose due to acne rosacea of years' standing and with some past history of alcoholic indulgence? 3. Are the various elastic reducting belts for the removal of surplus abdominal fat and excessive waist lines a satisfactory and reliable form of treatment? Kindly omit name.

M.D., California.

ANSWER.—1. The most important part of the treatment of acne rosacea is the elimination of the causative factors, if they can be found. Investigation should be directed to the gastrointestinal tract, the cardiovascular system, intranasal conditions and endocrine dysfunction, particularly faulty menstruation and hyperthyroidism. The foods to be prohibited include alcohol in all forms, coffee and tea, spices, sweets, and very hot or highly seasoned foods and drinks. Local treatment is intended to produce a mild stimulation and exfoliation. Daily application of a half-strength lotio alba or of other lotions containing from 2 to 5 per cent of sulphur or resorcinol may be employed. If many pustular lesions are present, weekly administrations of fractional doses of x-rays are indicated. Ultraviolet irradiations may also be of benefit. Dilated capillaries may be destroyed by electrolysis.

2. Large bulbous red nose due to acne rosacea is known as rhinophyma. It consists chiefly of overgrowth of connective tissue and sebaceous glands and it can be greatly improved by

trimming. Under an anesthetic, the nose is trimmed with a razor, or with a scalpel and scissors, to its normal contour. Care must be taken to avoid injuring the cartilage or the bony structure. It may be convenient to put the finger in the nostril to get a firm surface. Bleeding, which may be abundant or not, is controlled with hot compresses. If the patient is put in a horizontal position, the nose should be plugged to prevent back-flow of blood after the operation. The nose should be dressed in sterile wet dressings. The sebaceous glands are so large and deep that in the trimming process remnants of the glands are left as islets of epithelium from which epidermization takes place so that grafts are not necessary. The cosmetic results are surprisingly good.

3. The elastic so-called reducing belts for the alleged reduction of obesity are the sheerest kind of buncombe. The idea that one can wear a belt that will massage away fat is a fantastic concept. At least one widely advertised device of this kind was advertised some ten years ago merely as a paunch supporter. Then, as "obesity cures" became a profitable line, they entered that field. That such belts may give a feeling of support to those whose abdominal muscular tone is poor is unquestionably true, but that they have anything whatever to do with the reduction of weight is obviously untrue.

CALLUS FORMATION DELAYED IN LEAD POISONING

To the Editor:—During the past year, in this location, I have had numerous fracture cases usually associated with trauma of considerable severity due to falling rocks, crushing forces and strains. And it has been my experience that regardless of the promptness of the reduction of the displaced bone ends there has been a noticeable delay of callus formation as evidenced by roentgenograms. Indeed, one might almost say there has been an absence of the laying down of solid bone material until long after it should be frankly evident. This has presented a serious problem. Clinically, patients appear to have recovered. Externally there is no evidence of the lesion and in most instances the patient thinks he can use the injured part and the usual period of restoration has more than elapsed, yet if good x-ray plates are taken almost no callus is evident. Therefore the problem is what to do with these patients. Should they be allowed to use the part, mild exercise, to stimulate the deposit of bone salts or not? Or should rigid immobilization be continued until a good callus is unquestioned by roentgen examination? I have tried different means to stimulate callus: rest and immobilization over a long period, hot soaks or applications, massage, elevation, heliotherapy, diathermy, and the administration of drugs such as potassium iodide, compound solution of iodine, and calcium, mainly the lactate, with no noticeable benefit. Hence I would appreciate any suggestions likely to aid. Most of my fractures are in miners. They work in a mine producing lead, with the associated minerals zinc and silver. There are nonpaying amounts of iron and copper in the ore and the mine water contains at some levels troublesome amounts of sulphuric acid. Of course, the natural inference would be that the men patients are somewhat leaded. Yet this assumption is not entirely tenable because some injuries occur in new workers not having time to become leaded and the ore is practically all sulphide of the metals, which is reported by Arthur L. Murray (Lead Poisoning in the Mining of Lead in Utah, technical paper 389, Department of Commerce, Bureau of Mines) to be the less soluble of the common lead salts found in ores. Thus, on page 17 he gives as the solubility of lead carbonate 46.1 per cent; of lead sulphate, 9.5 per cent, and of lead sulphide, 2.5 per cent. Although solubility is not necessarily the index of toxicity, solubility certainly has a larger influence in the absorbability of the metal. Murray cites data showing that cases of lead poisoning occur about four times as often in working the carbonate of lead as the sulphide. Our ores are practically 100 per cent sulphides. Thus, if we assume that lead absorption is the factor we are facing the fact that we have contact from the relatively safest form of the metal. Likewise we are ignoring other factors which may have greater influence, such as local water supply, being deficient in certain minerals, lack of sufficient sunlight, syphilis or other constitutional factors, age, food and nutritional states. We are also told that lead poisoning is relatively rare except with prolonged exposure to small amounts, whereas the incidence of delayed callus formation in my series is surprisingly high. Thus though we cannot rule out entirely the influence of lead in clinical amounts, it may not be wise to hang all the blame on that one peg. Yet it is of interest to keep in mind the fact that the final disposition of lead in the body is said to be skeletal. Both surgically and economically this is a serious problem because most, if not all, of my cases have to be cared for over a period seldom less than two or three times the usual period of disablement. I would like to have access to data showing the factor of lead in other locations in its relation to fracture repair. Please do not use name or address.

M.D., Montana.

ANSWER.—A few publications in the past five years have contended that lead poisoning is on the wane. While there may be some diminution in fatal and severe cases, minor lead intoxication or lead absorption probably is highly prevalent wherever exposure is provided. In lead mining, smelting, refining, white lead manufacture, battery manufacture and painting, lead is present in large numbers of the exposed workmen. Clinical lead poison may arise with infrequency, which, however, does not rule out the influence of minute quantities of lead on the functions of the body. Without complete facts with reference to mining, it is reasonable to maintain that lead sulphide may be taken into the body in harmful amounts despite its relative insolubility, that new workers may acquire, in such a period as one week, lead deposits in their bodies, that lead directly or indirectly is related to ununited fractures, and that the sulphuric acid content of the water of the community is a factor, if through drinking such waters (or any other entry of water) the hydrogen ion content of the body is altered.

In one industrial clinic in this country, effort has been made to diagnose lead poisoning or lead deposition by the x-rays. Since density of bone varies from person to person, the only practical method of application is to make plates at the outset of employment and prior to exposure to lead, and again when lead poisoning or absorption is suspected. Apparently, the presence of lead in bone leads to greater density of x-ray shadows.

While it may not be maintained that the deposition and stripping of lead and calcium into and from bone are well understood matters, there are a number of research results having a bearing on such matters as callus formation in persons who may harbor lead in bone tissues. Reference is made to the monograph "Lead Poisoning" by Aub and his associates (Baltimore, Williams and Wilkins Company, 1926) for thorough presentation of the underlying principles.

Calcium in bone may be replaced by lead, after which it is possible that redeposition may be hampered by injury to the osteoblasts, which cells secrete calcium. Under experimental conditions the organic portions of bone that have been subjected to the action of lead and have absorbed lead are highly dissimilar to normal tissue. This action of lead on bony tissue may be reflected in the high incidence of arthritis or some analogous lesion in lead poisoning. Lewy has expressed the opinion that actual necrosis of bone may be brought about by lead. Dental caries, so prevalent in lead workers, may stand in relation to this contention. Aub, however, finds no evidence that lead in bone is other than harmless.

Assuming for the moment that the group mentioned in the query are not suffering from such things as lack of vitamins, syphilis or undue infection, and assuming further that lead absorption has taken place, it does not seem possible to offer a precise explanation, only the suggestion being made that the presence of lead in bone hampers the laying down of a callus, and that those agents commonly employed to delead the patient also tend to decalcify.

As practical steps in the investigation of this unusual situation, the following suggestions are made:

1. Studies should be made of the community waters and the possibility of acidosis existing among these workers. Acidosis hampers callus formation.

2. Studies should be made of the community waters as to the content of lead.

3. Studies should be made of the progress of similar fractures in men of comparable ages not engaged in occupations involving exposure to lead.

4. Studies should be made of apparently normal lead workers as to lead absorption. Abnormal quantities of lead in urine, and the presence of premature red cells in abnormal numbers in the blood may provide some evidence. Roentgen examinations may prove valuable.

PERSISTENT HICCUP

To the Editor:—A man, aged 69, in excellent health all his life and of good habits, with no history of venereal diseases, of normal weight (190 pounds, or 86 Kg.), with excellent appetite and digestion, sleeps well and has no pain. In the past three months he has lost one third of his weight and has constant hiccup. I am unable to assign one single factor—the lungs, heart, teeth, ears, kidneys and blood vessels, so far as I can know, are normal. Amytal relieves, but when discontinued there is a return of unfavorable symptoms. I would be pleased to have your early opinion. Please omit my name.

M.D., Iowa.

ANSWER.—It is manifestly impossible to cover all the possibilities that may be considered in the report submitted. Hiccup is produced by a sudden clonic spasm of the diaphragm accompanied by a spasmodic closure of the glottis. It is either central or peripheral in origin. It may occur as a result of any irritation of the phrenic nerve, by inflammation or pressure, by lesions along its course or reflexly through the vagus. It may be a symptom of functional disease of the cerebrum, as in neurosis and epilepsy, or organic disease, as in brain tumor, or a symptom of some apparent or obscure gastrointestinal trouble, such as lesions of the stomach or colon near the diaphragm, gallbladder, appendix or peritoneum. The acute abdominal conditions do not require consideration here. It may also occur reflexly from diseases of the pleura, pericar-

dium, suprarenal, or some of the chronic constitutional diseases. It would be advisable in the case cited to make a complete examination with the purpose of determining any of the lesions mentioned. A complete neurologic examination, an inquiry into chest conditions which might irritate the diaphragm or phrenic nerve, a fluoroscopic examination of the chest and the gastrointestinal tract, with particular attention to the areas adjacent to the diaphragm and a search for the constitutional diseases by appropriate methods, should be done. The loss of so much weight might suggest looking particularly for carcinoma of the fundus of the stomach or colon, or hyperthyroidism. Failing these, the only treatment that can be suggested is some form of suggestive therapy, which seems hardly to meet with success, or one of the many sedatives as bromides, benzyl benzoate, belladonna, Hoffman's anodyne, or morphine.

DIFFERENTIAL DIAGNOSIS IN LEUKOPENIA

To the Editor:—My little boy, aged 28 months, has aleukocytic leukemia. He has a gingivitis and fever. The white blood cell count is 8,250, and the differential smear shows nothing but lymphocytes. He was a specimen of perfect health until three days ago. Please tell me all you can about this case. Please omit name and address. M.D., Florida.

ANSWER.—The information given is not sufficient to form the basis of any accurate conclusion. Measles in the prodromal stages suggests itself. First hand information would easily rule this out. So-called infectious mononucleosis is rather a distant possibility because of the low white count. Little can be said of the possibility of a sepsis with leukopenia agranulocytosis, as the complete blood picture is not given. More common are influenzal infections which are associated with a low white blood cell count. Diagnosis may be difficult and made only by exclusion.

"STOMACH RASH" OR INFECTIOUS DISEASE

To the Editor:—I do not find in any of the medical textbooks a "stomach rash" given in the differential diagnosis of scarlet fever. Is there any sort of "stomach rash" that comes on acutely and which can be confused with either scarlet fever of German measles? Do not the rashes due to the eating of certain foods resemble hives or a chronic eczema and not an acute diffuse reddening?

C. R. SMITH, M.D., Decatur, Ill.

ANSWER.—In some persons there is a sensitiveness to certain foods and such persons may develop a variety of cutaneous disturbances after such foods are taken. Nausea and vomiting are not infrequently present in such cases and this probably explains the origin of the popular term "stomach rash." In the acute cases the eruption is most often of an urticarial character but may resemble more or less closely the eruption of acute infectious diseases. The other things that are characteristic of such diseases are absent.

ENDOCERVICITIS

To the Editor:—I am writing to you for suggestions in treatment of a woman, aged 32, who weighs 120 pounds (54 Kg.), is married, and is a housewife and beauty parlor operator. She has two children, aged 10 and 12. She had induced abortions followed by curettage four and five years ago. Six years ago she had the right ovary and right tube removed. During the past three years she has had a mucopurulent discharge and pelvic pains of varying degree, which at times confine her to bed. They are made worse by automobile riding, tap dancing, and when working hard or keeping late hours. At times there is some frequency during the day only. The general physical examination is negative. Pelvic examination shows inflammation throughout the entire vaginal vault and cervix, levator ani pillars, cervix and lower abdominal quadrants. No masses are palpable. The discharge from the cervix is mucopurulent and profuse; that from the vagina, milky and profuse. The uterus is in good position, normal in size and freely movable. This woman was recently referred to a gynecologist who hospitalized her for ten days with rest in bed, hot potassium permanganate douches, hot water bottle on the lower part of the abdomen, and liquid diet, without improvement. I since have tried tampon treatment but discontinued it as it increased her pain. Five cervical and vaginal smears were negative for gonorrhea. The Wassermann reaction is negative. There is no venereal history. Hemoglobin is 75. At present I am treating her with daily swabbing of the vaginal vault with 15 per cent mild silver protein and hot boric douches (ambulatory) without result. Any suggestions you can make will be greatly appreciated. Please omit name. M.D., New York.

ANSWER.—This patient most likely has chronic cervicitis and endocervicitis in addition to a chronic pelvic inflammation. While douches are frequently helpful in such conditions, they are not always effective. To be beneficial at all they should be prolonged for twenty or thirty minutes each time. Tap water is as effective as any other solution, but the water should be as hot as can be tolerated without discomfort. Most of the discharge probably comes from the cervix, and one of the most efficient ways of relieving this condition is the use of the electrical cautery. The nasal tip cautery is applied to the cervix in four or more areas, depending on the extent of the endocervicitis present. It is best to cauterize only one or two areas at a time and allow an interval of from ten to fourteen days between treatments. The patient should be warned that for a few days following each treatment the discharge may be worse and even blood tinged. If the cervix is not only badly infected but also extensively lacerated, it may have to be removed. Many cases of cervicitis and pelvic inflammation have been relieved by the use of diathermy and another useful measure for this type of pelvic inflammation is the administration of protein therapy. This is best carried out by giving injections of milk as described by Gellhorn (*Am. J. Obst. & Gynec.* **8**:535 [Nov.] 1924).

In these cases, an operation, except on the cervix, is seldom curative unless all the internal genitalia are removed. This is certainly not advisable in a woman only 32 years old; hence every effort should be made to give relief by conservative measures. Patience is therefore essential.

ETIOLOGY OF ASTHMATIC ATTACKS

To the Editor:—I have a patient, a man, aged 50, who for the last twelve years has had spring hay-fever. During the last six months he has had a bronchial asthma of progressive severity which became extremely severe during the first of June, the season at which he has previously suffered from hay-fever. I have given him cutaneous tests for all the common varieties of spring grasses and weeds, none of which showed up positive. A change of location of 200 miles from another part of the state to Duluth has brought about a complete relief of the asthma. There has been no appearance of the spring hay-fever this season. An interesting observation was made today: the patient took a Smith Brothers' cough drop and within one minute went into a most severe asthmatic attack. I gave him a cutaneous test, using one of these cough drops, and the test was negative. I then had him eat another of the cough drops and within five minutes he was in another asthmatic attack, but of less severity than the first one. He states that two months ago he took a teaspoonful of Ward's Liniment and suffered a similar attack lasting about an hour. Can you give me any information on what ingredient there might be in these two products that might cause this allergic reaction?

H. S. FRENCH, M.D., Duluth, Minn.

ANSWER.—The asthma is probably due to the pollens of grasses, especially June grass, red-top, orchard grass or timothy. If cutaneous tests with these are negative, intracutaneous tests of about 1:1,000 strength should be tried. If these are negative, conjunctival tests should be made, a raw grain of pollen being placed on the lower eyelid. If this is negative, the cause of the hay-fever symptoms and of the asthma is almost certainly something else than pollens; and complete protein tests should be made, including epidermals, foods and miscellaneous materials, such as orris root.

Smith Brothers' cough drops contain sugar, charcoal, oil of sassafras and some unidentified matter. Ward's Celebrated Liniment contains alcohol, soap, sassafras oil, extract of red pepper and colored water. The sassafras oil is common to the two and might possibly be the offending agent. Try giving some of this when the patient feels well to see if asthma results.

ERYTHEMA INDURATUM

To the Editor:—A woman came to me with a diagnosis from the Columbia Medical Center of erythema induratum. She has been receiving treatments of gold salts, Krysolgan, and also thiosulphate. I wrote to the center and received this information, but not the dosage. She wishes me to give her these treatments and I would like to know the efficacy of them, the dosage, administration, and any other useful information. Kindly omit name. M.D., New York.

ANSWER.—Erythema induratum is always, probably, of tuberculous origin. For that reason gold treatment is indicated. Krysolgan has not had an extensive application in this country, but gold sodium thiosulphate is used extensively in the treatment for lupus erythematosus, tuberculosis, and various types of tuberculosis of the skin. The results with gold compounds in erythema induratum have not been satisfactory with the exception of a few isolated cases.

The initial dose of gold sodium thiosulphate is from 5 to 10 mg. dissolved in 2 cc. of sterile distilled water, given intravenously. If this is well tolerated, the second dose is 25 mg. given from five to seven days later. After this the dose is repeated at weekly intervals. Doses up to 50 mg. may be administered and they have been as satisfactory as doses of 100 mg. Contraindications to the use of gold salts are albuminuria, renal dysfunction, pregnancy and, perhaps, disease of the liver. The injections usually do not give rise to symptoms, but occasionally they produce reactions which are likely to

occur several hours after the injections have been made. Among the reactions are chills, nausea, vomiting, headaches, prostration and fever. The serious reactions are dermatitis and nephritis—albuminuria and casts. Fever and malaise, as well as dermatitis and albuminuria, may last for several weeks. These reactions usually occur from larger doses, rarely from doses of 50 mg. or less. If reaction occur, the treatment should be interrupted until the symptoms disappear; then cautious treatment may be resumed with 5 or 10 mg. of gold sodium thiosulphate. If reactions still occur, the treatment should be discontinued. The intravenous injection of sodium thiosulphate as an antidote has been employed with apparent success in these cases, as in other cases, of poisoning from the salts of heavy metals. These reactions are so rare that their importance should not be deterrent to the cautious use of the remedy, but they should put one on guard against large doses and pushing the remedy when symptoms occur from it. Serious reactions —even fatal ones—have occurred.

ANTISEPTIC SOLUTIONS FOR IRRIGATING EMPYEMA CAVITY

To the Editor:—Please inform me as to the comparative values of the various antiseptic solutions employed in irrigating a chronic tuberculous empyema cavity. Please omit name and address. M.D., New York.

ANSWER.—No exact comparative studies seem to have been published as to the effectiveness of the various solutions in the treatment of secondarily infected tuberculous empyema. Surgical solution of chlorinated soda, solutions of the aniline dyes, especially methylthionine chloride, gentian violet and a freshly made solution of 1 part iodine and 2 parts potassium iodide in 10,000 parts of water are among the antiseptics most commonly used.

Surgical solution of chlorinated soda is bactericidal and solvent of necrotic tissue, but if there are superficial caseating areas in the lung they may be eroded and hemorrhage and bronchial fistula may result. Surgical solution of chlorinated soda should therefore be used only in cases presenting chronic thick-walled cavities.

The dyes are best used in weak solutions, first one and then the other being used. Sterile physiologic solution of sodium chloride is always safe and if used in sufficiently frequent intervals and in large enough amounts to cleanse the walls of the cavity mechanically will probably be almost as effective as the antiseptic solution. It is the only solution that is well tolerated in the presence of bronchial fistula.

ETIOLOGY OF DERMATITIS VENENATA

To the Editor:—Can a drug given by inhalation or an atomizer cause dermatitis medicamentosa or, in other words, can it cause the manifestations on the skin of the contents of the said drug in susceptible people?

WILLIAM J. MACDONALD, M.D., Boston.

ANSWER.—Any drug that causes a dermatitis venenata in a susceptible individual will produce the same skin manifestations when absorbed by inhalation.

METHOD OF ADMINISTERING MERCURY

To the Editor:—Why is mercury supposed to be more effective by intramuscular injection or by inunction than by mouth in the treatment of syphilis? W. G. WALKER, M.D., Brockton, Mass.

ANSWER.—Because, given by mouth, the purgative action of mercury greatly interferes with its adequate absorption.

SOUND PHASES IN BLOOD PRESSURE DETERMINATIONS

To the Editor:—In your issue of July 19, under Queries and Minor Notes, Dr. E. P. Hummel, of Sterling, Colo., asks a question regarding sound phases in blood pressure determinations. Your answer seems unsatisfactory to me in that you do not take note of the so-called silent gap, well described by your correspondent. This phenomenon is not uncommon. I have observed it a number of times in patients with hypertension and it is discussed in an interesting manner by Dr. Louis H. Sigler (Spontaneous Nonrhythmic Variations in the Blood Pressure Levels and in the "Silent Gap," a theory of Vasomotor Arrhythmia, *Am. J. M. Sc.* **177**: 494 [April] 1929).

Sigler states that the condition was first described according to Gibson by Tixier and by Gallivardin. The cause of the "silent gap" is not definitely known. Sigler offers a theory of vasomotor arrhythmia to explain the phenomenon. "The theory assumes a disturbance in the discharge of rhythmic vasomotor impulses from the medullary vasomotor center, caused by local anemia there, such as would be produced by angiospasm or the like." WILLIAM E. MCCOLLOM, M.D., Brooklyn.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARIZONA: Phoenix, Oct. 7 and 8, 1930. Sec., Dr. H. P. Mills, 14 N. Central Ave., Phoenix, Ariz.

ARKANSAS: Little Rock, Nov. 3, 1930. Basic Science. Sec., Mr. Louis E. Grebauer, Little Rock, Ark.

COLORADO: Denver, Oct. 7, 1930. Sec., Dr. W. W. Williams, 224 State Capitol Bldg., Denver, Colo.

CONNECTICUT: New Haven, Oct. 11, 1930. Basic Science. Address State Board of Healing Arts, 1895 Yale Station, New Haven, Conn.

GEORGIA: Atlanta, Oct. 14-16, 1930. Sec., Dr. B. T. Wise, Americus, Ga.

IDAHO: Boise, Oct. 7, 1930. Comm., Hon. F. E. Lukens, Boise, Idaho.

ILLINOIS: Chicago, Oct. 14-16, 1930. Supt., Mr. P. B. Johnson, Springfield, Ill.

MICHIGAN: Lansing, Oct. 14-16, 1930. Sec., Dr. F. C. Warnshuis, 1010 Macabee Bldg., Detroit, Mich.

MINNESOTA: Minneapolis, Oct. 7 and 8, 1930. Basic Science. Sec., Dr. E. T. Bell, 110 Anatomy Bldg., University of Minnesota, Minneapolis, Minn. Reg. Minneapolis, Oct. 21-23, 1930. Sec., Dr. E. J. Engberg, 524 Lowry Bldg., St. Paul, Minn.

MONTANA: Helena, Oct. 7, 1930. Sec., Dr. S. A. Cooney, Power Block, Helena, Mont.

NEBRASKA: Lincoln, Oct. 7-8, 1930. Basic Science. Sec., Mr. Ernest M. Pollard, Lincoln, Neb.

NEVADA: Carson City, Nov. 3-5, 1930. Sec., Dr. Edward E. Hamer, Carson City, Nev.

NEW MEXICO: Santa Fe, Oct. 13-14, 1930. Sec., Dr. W. T. Joyner, 20-21 First National Bank Bldg., Roswell, N. M.

RHODE ISLAND: Providence, Oct. 2 and 3, 1930. Dir., Mr. L. A. Round, 319 State Office Bldg., Providence, R. I.

WYOMING: Cheyenne, Oct. 6, 1930. Sec., Dr. H. W. Hassed, Capitol Bldg., Cheyenne, Wyo.

Maryland Homeopathic June Examination

Dr. J. S. Garrison, secretary of the Board of Homeopathic Medical Examiners of Maryland, reports the written examination held at Baltimore, June 10-11, 1930. The examination covered 8 subjects and included 70 questions. An average of 75 per cent was required to pass. Four candidates were examined and passed. The following college was represented:

College	PASSED	Year Grad.	Per Cent
Hahnemann Medical College and Hosp. of Philadelphia		(1930)	83.6, 83.9, 86.3, 90.4

Alabama July Examination

Dr. J. N. Baker, secretary of the Board of Medical Examiners of Alabama, reports the written examination held at Montgomery, July 8-11, 1930. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Eighteen candidates were examined and passed. Seventeen physicians were licensed through reciprocity with other states. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Howard University School of Medicine		(1929)	90.1
Emory University School of Medicine		(1930)	85.1, 87.6
Chicago College of Medicine and Surgery		(1911)	85.5
Northwestern University Medical School		(1930)	82.6
Rush Medical College		(1929)	88.1*
University of Louisville School of Medicine		(1930)	82.7, 84.4
Tulane University of Louisiana School of Medicine		(1930)	81.2, 84.6, 87.2, 88.1
Jefferson Medical College		(1930)	91.3
University of Pennsylvania School of Medicine		(1930)	90.1
Medical College of the State of South Carolina		(1928)	84.4
Baylor University College of Medicine		(1930)	91.7
Vanderbilt University School of Medicine		(1930)	90.7, 91.3

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine		(1921)	Georgia
University of Georgia Medical Department		(1929)	Georgia
Rush Medical College		(1929)	Illinois
Tulane University of Louisiana School of Medicine		(1915) (1929)	Mississippi Louisiana
Baltimore University School of Medicine		(1904)	Georgia
Johns Hopkins University School of Medicine		(1915)	Maryland
University of Maryland School of Medicine		(1915)	N. Carolina
Missouri Medical College		(1898)	Missouri
University of Oklahoma School of Medicine		(1916) (1929)	Oklahoma
Meharry Medical College		(1929)	Tennessee
Memphis Hospital Medical College		(1899)	Mississippi
University of Tennessee College of Medicine		(1921) (1928)	Tennessee
Vanderbilt University School of Medicine		(1927) (1929)	Tennessee

* This applicant has received a four year certificate and will receive an M.D. degree on completion of one year's internship in a hospital.

Book Notices

HISTORY OF MEDICINE IN NEBRASKA. Edited by Albert F. Tyler, M.D., Compiled by Ella F. Auerbach. Cloth. Pp. 662, with illustrations. Omaha: Magic City Printing Company, 1928.

This is the first full record of the achievements of the Nebraska medical profession. The editor, Dr. Albert F. Tyler of Omaha, was assisted by twenty-four collaborators from different sections of the state. The beginning of the history of medicine in Nebraska can be traced to the week of Sept. 26, 1819, when United States troops came up the Missouri River by steamboat and landed at Fort Calhoun, near Omaha. One of this band, Dr. John Gale, married an Indian chief's daughter, and his grand-daughter, Dr. Suzanne La Flesche, afterward Picotte, graduated from the Women's Medical College of Philadelphia. She thus was the only American Indian woman physician. The medical work of Gale and his associate Mower is notable in medical annals in their handling of the terrible scurvy epidemic in 1819, when 500 of the 788 soldiers were ill and 157 of them died. It is indeed a far cry from the saddle-bag days of the pioneer to the airplane of the present, yet one Nebraska practitioner, F. A. Brewster of Beaver City, has been credited with being the first medical man to make a professional call by air. Great steps in progress are incorporated in this story of the frontier doctor who "treated his patient rather than the disease," up to the introduction of aseptic surgery methods in Nebraska by J. E. Summers and A. F. Jonas, who yet live. What would the early pioneers say if they could see the progress medicine has made in Nebraska—the splendid hospitals which have been developed over the state, the medical schools, the war service record and the scientific achievements of Nebraska physicians?

About 114 pages of this book are given to a directory of Nebraska physicians and 129 pages are devoted to more lengthy biographies of the pioneers. The personal data are unusually comprehensive and write-ups are enhanced by many photographs. These personal records are woven into a romantic story of the deeds of the profession. Full accounts are given of such men as Livingston and Peabody, who founded the Nebraska State Medical Association, and von Mansfelde, who did more than any other physician in the state in rendering personal service for organized medicine. Preeminent is that splendid group of men, Harold Gifford, Milroy, B. B. Davis, F. S. Owen, McClanahan, Summers and Jonas, who laid the foundations of effective medical legislation, organized medical societies, and established medical schools, hospitals and publications. Inseparably connected with the Nebraska College of Medicine is Irving S. Cutter, whose abilities were later called into the organization of the Northwestern University Medical School. Noteworthy also is the work done for the Creighton University Medical School by Dr. H. von W. Schulte. Nebraska's war record emphasizes the achievements of the medical profession in the person of Karl Connell, who developed the gas mask, and of A. S. Pinto, yellow fever hero, who was one of the first volunteers to be bitten by infected mosquitoes and was one of the survivors of that band of martyrs. The work of the personnel of Base Hospital 49 in the World War receives full review in all its historical significance. Another person who must be included in Nebraska's achievements is Dr. Olga Stastny, who accomplished international recognition for her postwar service in Czechoslovakia and elsewhere on the continent. At the Detroit session she was made president of the National Association of Medical Women. Medical journalism has had some important contributions from the manpower of Nebraska. The *Western Medical Review* was founded by George H. Simmons, who lived in Lincoln. In 1899 he was chosen editor and general manager of the American Medical Association, which he served for twenty-five years, during which time he inaugurated the present organization of our national body. Dr. F. A. Long of Madison first proposed the *Nebraska State Medical Journal* in 1907, and since its establishment in 1916 has, as editor, brought it up to its high excellence among state medical publications. This brief summary cannot recount more concerning Nebraska's men of distinction—the book is a complete record of their interesting histories. Not the least important feature of this volume is the account of the events and personalities in the formation of county societies, the frontier line trenches of organized medicine in America. A reading of "History of Medicine in Nebraska" will reveal that Nebraska doctors voluntarily played their part in the spread of the empire westward. Once established, individuals have ever kept the profession on the highest plane of excellence. Every Nebraska physician will find this book invaluable for reference and a surprise from the standpoint of interesting reading. It is commended to all who are interested in Nebraska's history and particularly in the achievements of Nebraska physicians.

DIE ENTZÜNDLICHEN ERKRANKUNGEN DER WEIBLICHEN GESCHLECHTSORGANE: IHR WESEN, IHRE ERKENNUNG UND BEHANDLUNG. Von Professor Dr. C. Bucura, Vorstand der Frauenabteilung der Wiener Allgemeinen Poliklinik. Paper. Price, 12.60 marks. Pp. 206, with 22 illustrations. Vienna: Julius Springer, 1930.

The majority of the inflammatory diseases of the female pelvic viscera are curable without surgery. Bucura decries the needless sacrifice of pelvic organs in girls and young women particularly for "inflammation of the ovaries." Especially is gonorrhea handled poorly in general, he says; not only is it rarely cured but in addition is usually not recognized primarily. The microscope, so necessary for the diagnosis, is known to few and used by fewer. Because of this, serious sequelae to female gonorrhea result. The author takes up the nature and recognition of the inflammatory pelvic conditions under general and special headings. The former is especially devoted to a consideration of gonorrheal infection in great detail, including immunicologic studies and vaccine therapy. There is no natural immunity to the gonococcus in man. In vaccine therapy one simply initiates the natural powers of immunity, a development from Pasteur's original studies. The nongonorrheal infections are next considered, and then the special conditions affecting each organ separately, beginning at the vulva and vagina, and considering the cervix, the corpus and its adnexa. The second half of the monograph is devoted to management of the pelvic inflammatory diseases. Local and general, specific and nonspecific, surgical and nonsurgical therapy are discussed. In all, Bucura has made a distinct and valuable contribution to gynecology by a careful analysis of his material and of the literature, and by his decidedly conservative attitude in treatment.

COLLECTED PUBLICATIONS FROM THE ROBERT DAWSON EVANS MEMORIAL FOR CLINICAL RESEARCH AND PREVENTIVE MEDICINE. No. 1: ENDOCRINE STUDIES. Cloth. Various pagination. Boston: F. J. Barnard & Company, Inc., 1929.

The staff of the Robert Dawson Evans Memorial has been conducting investigations of endocrine disorders continuously since 1912. Several of its papers have been published from time to time in medical journals, but this volume is the first formal publication of the results of its work. The book opens with a chapter by Allen Winter Rowe, in which the painstaking and thorough methods of study of individual cases are described. The study of more than 4,000 patients was in each instance carried forward in the same general way. A history was most carefully taken, a complete physical examination was made, a routine for the patient was established, and a number of laboratory tests were made. The patients are classified and a separate chapter of the book is devoted to each of the following classes: (1) the functional disturbances of the pituitary, (2) the thyroid group, (3) the gonads, male and female, (4) the suprarenals and (5) the so-called pluriglandular syndromes. The studies are summarized in the last chapter, entitled "The Differential Diagnosis of Endocrine Disorders." Here one finds many statements that are of great interest. A group of 500 endocrine cases in this study was taken and the relative frequency of the complications which they presented was ascertained. These figures were compared with the complications which a group of 500 nonendocrine cases presented. There is said to be a large degree of correlation between the complications and the endocrine disorders. The frequent occurrence of tuberculosis and of kidney disease in the suprarenal group of these patients and the frequent occurrence of syphilis and

cataract in the pancreas group of cases are noted. This correlation is believed to be significant. Endocrine disorders occur more frequently among females than among males, the figures of this institution showing a ratio of three females to one male. The patients with diabetes, however, were an exception to this rule, the female incidence here being slightly less than in the nonendocrine group. All the major endocrine groups in this study show a high incidence of obesity. The pituitary leads with nearly 50 per cent, while one in three of the thyroid patients and one in four of the ovarian failures were at least 15 per cent overweight. A large number of nonendocrine conditions, of course, are associated with the ovary, and it would therefore be unwise to base a diagnosis of endocrine disorders on the distribution of fat. The pituitary patient commonly has the selective girdle distribution of fat, and in ovarian failure a fat body with thin legs is common. And so on goes the discussion of other symptoms in a few sentences which summarize the observations in each one. This summary continues with the laboratory measurements found. Glycosuria frequently occurred in suprarenal failure, and slight glycosuria is a common finding in ovarian failure. Glycosuria, however, is a most infrequent finding in an established pituitary failure, for increased sugar tolerance characterizes failure of the posterior lobe. Hyperpituitarism lowers the assimilation limit for sugar as markedly as pituitary failure rises. The average leukocyte count in this large group of patients was normal; where there was an abnormal count, it usually was due to some intercurrent condition. There is much useful information in this book, particularly in the last chapter. It has a special value in view of the large number of patients that came under observation.

THE MEASUREMENT OF BIOLOGICALLY ACTIVE ULTRA VIOLET RAYS OF SUNLIGHT. By Leonard Hill. (Rapport fait à la 1re Conférence internationale de la Lumière, Lausanne-Leysin, 10-13 septembre 1928). Paper. Pp. 12, with 6 illustrations. Paris: L'Expansion Scientifique Francaise, 1928.

This pamphlet presents measurements made by the author of the average amount of natural ultraviolet rays present in sunlight throughout the year at various places in England, Scotland, Switzerland and Egypt. Determinations of the biologically active rays were made by means of the fading of A. Webster's standard solution of acetone and methylene blue. Comparison of the acetone blue method with the photographic method is made. Dr. Hill concludes that the photographic method cannot be used to measure the biologic effect of ultraviolet rays.

LES BRONCHO-PNEUMONIES CHEZ L'ENFANT OU PNEUMONIES EN FOYERS: ÉTUDE ANATOMIQUE DE QUELQUES FORMES SURAIGUËS ET AIGUËS. Par André Héraux, préparateur de laboratorie d'anatomie pathologique de la Faculté. Préface de M. Gustave Roussy. Paper. Price, 18 francs. Pp. 122, with 21 illustrations. Paris: Masson & Cie, 1929.

This monograph is devoted to a study of the bronchopneumonias of infancy, from the point of view of pathologic anatomy and pathogenesis. The etiologic and clinical data are presented only as is necessary to make clear the study in morphology. Héraux has studied forty-two cases of infantile bronchopneumonia anatomically and histologically and presents his data in a clear, well classified and well illustrated monograph. The author objects to the term "bronchopneumonia" as too narrow and inaccurate and prefers the use of the term "pneumonie en foyers" or focal pneumonia. The hyperacute and acute types of pneumonia occurring after measles, whooping cough, influenza, gastro-intestinal disturbances and pyogenic infections of the skin are described macroscopically, histologically and topographically. The author distinguishes the acute from the hyperacute types of bronchopneumonia. He notes that hyperacute bronchopneumonia is characterized anatomically by a diffuse edematous pulmonary congestion located postero-inferiorly and without any foci of hepatization. The acute type is characterized by the presence of numerous miliary or nodular foci of inflammation. Although there are no definite types characteristic for the various etiologic forms of pneumonia, the author indicates in a general way the characteristics of certain types of infection. Thus the hyperacute grippal form is characterized by hemorrhagic suffusion; that of athrepsia has a paravertebral band of consolidation; hemorrhagic alveolitis is a characteristic occurrence in measles, whooping cough and grip; catarrhal alveolitis and atelectasis occur in athrepsia. In the acute type of bronchopneumonia in measles there are numerous foci of suppuration and consolidation and there is a tendency to hemorrhage. In whooping cough there are similar lesions except that the foci tend to show gray hepatization, emphysema and bronchial dilatation. In influenza there is a tendency to interstitial hemorrhages. The most frequent microscopic finding was a diffuse mucopurulent bronchitis and peribronchitis. There is an interesting chapter on giant cell bronchopneumonia (broncho-pneumonie à cellules géantes) which is deserving of further study. As to pathogenesis, Héraux discusses briefly the aerogenic, hemogenic and lymphogenic modes of origin, but he himself does not feel qualified to make any dogmatic statements on the basis of purely morphologic studies. This recent French anatomic study of bronchopneumonia in infancy gives a clear presentation of the morphologic changes and offers an unbiased, scientific exposition of the entire subject.

MANUAL OF PHYSICAL AND CLINICAL DIAGNOSIS. By Dr. Otto Seifert and Friedrich Mueller, Professor Medicine, II Med. Clinic, Munich. Authorized translation from the twenty-fourth German edition by E. Cowles Andrus, M.D., Associate in Medicine, Johns Hopkins University. Leather. Price, $6. Pp. 543, with 143 illustrations. Philadelphia: J. B. Lippincott Company, 1930.

It is surprising how much information the authors have been able to include in such a small book. It is the most complete, compact and useful compendium on the subject that has ever come to our attention and should prove particularly valuable to students and interns in their work in the wards and with outpatients. It is profusely illustrated, contains blank pages interspersed throughout for personal notes, and has a good index in addition to an appendix, consisting of tables of drugs with dosage and solubility, analysis of spring waters, and tables of various poisons with symptoms and proper therapy.

KURZES HANDBUCH DER OPHTHALMOLOGIE. Herausgegeben von F. Schieck und A. Brückner. Band V: Gefässhaut. Linse. Glaskörper. Netzhaut. Papille und Opticus. Bearbeitet von W. Gilbert, A. Jess, H. Rönne und F. Schieck. Paper. Price, 134 marks. Pp. 774, with 466 illustrations. Berlin: Julius Springer, 1930.

This is the fifth volume of the Handbuch, which appeared simultaneously with the first volume, which was reviewed in THE JOURNAL, May 31. The first part deals with disease of the uvea (iris, ciliary body and choroid) occupies 169 pages, and was written by Gilbert of Hamburg. It is to a great extent an expression of the views of the author and not an outline of the general attitude on the subject, such as a chapter in a handbuch should be. The references are almost exclusively to German literature and are not as extensive as needed. The best part of this section is that on tuberculosis of the choroid. Then comes the lens by Jess of Giessen for 145 pages. This is one of the finest exposition of modern views of the lens that has ever been written. The diction is clear and good. The modern aspects of biomicroscopy and biochemistry receive due attention without the well established clinical points of view being lost sight of. After a careful unprejudiced analysis of the nonoperative treatment of senile cataract with a review of all methods now in vogue, the author comes to the conclusion that the course of that condition cannot be influenced to any appreciable extent. The vitreous, also by Jess, occupies only fifty-five pages, but it is just as carefully done as is the preceding chapter. The portion devoted to the biochemistry of the vitreous is particularly commendable. One of the editors, Schieck, wrote the next 233 pages, which are devoted to the retina. It is well done and contains not only current opinion but also many personal interludes. The bibliography of the chapter is extensive and embraces all languages but has a few noticeable omissions, such as the work of Benedict and Wagener on the essential hypertension fundus. The clinical descriptions of retinal lesions are good and the illustrations of retinal disease superb. The last chapter is by Roenne and deals with the optic nerve from the disk to the chiasm. It is a well written, clear-cut statement of the facts as they are known, freely illustrated with colored plates and visual field charts. The author takes a definite stand on the differentiation between papilledema

and papillitis, which for the sake of clearness he maintains should be termed neuritis nervi optici. His views agree with those of von Hippel in Graefe-Saemisch. He also takes a definite stand on rhinogenic retrobulbar neuritis, and although the arguments of both sides are cited, he questions the existence of that clinical entity. On the whole, the fifth volume upholds the standard set in the first, so that the entire series bids fair to be a work of great import.

L'OSTÉO-SYNTHÈSE MÉTALLIQUE DANS LES FRACTURES DIAPHYSAIRES: Étude expérimentale et anatomo-pathologique; applications pratiques à la chirurgie humaine. Par Robert Frantz. Préface du Professeur Bernard Cunéo. Paper. Price, 35 francs. Pp. 190, with 54 illustrations. Paris: Masson & Cie, 1929.

This represents an experimental study of the processes of repair of fractures fixed by various metallic appliances. Bone plates fixed with screws, Cuneo's staple, wires, Hallopeau's plates fixed with Parham bands, and the metallic cuffs of Contre Moulin were used for fixation. The conclusions are that in general the metal acts detrimentally in the production of bone necrosis and absorption, and the smaller the quantity that can be employed for adequate fixation, the better the results. He obtained the least reaction from the bone staple of Cuneo fixed by means of encircling wires. The results of the experiments speak against the use of metallic fixation materials and in favor of osteosynthesis by means of bone grafts.

PRACTICAL INDEX TO ELECTRO AND PHOTO THERAPY INCLUDING AN INDEX OF DISEASES WITH DESCRIPTIVE TECHNIQUES. By Joseph E. G. Waddington, M.D., C.M. Third edition. Leather. Price, $7.50. Pp. 424, with illustrations. Detroit: A. M. Margraf & Company, 1929.

This is a book evidently intended to cover the field of physical therapy—fundamental physical principles, biophysical phenomena, and clinical applications. When so much is attempted by one man it is but natural that he must draw on the work of others for material. Often the selection of material is wise and not infrequently unwise. One chapter is devoted to ozone and its medical applications. The bacteriologic and physiologic action of ozone was thoroughly discussed in an article by Jordan and Carlson, published some years ago in THE JOURNAL. These investigators concluded that ozone in sufficient concentration to have any effect was harmful and that ozone had therefore no place in medicine.

Galileo, in his "Dialogues," wrote of Gilbert and his work "De Magnette" as follows:

I extremely praise, admire, and envy the Author, for that a conceit so stupendious should come into his minde. . . . I think him moreover worthy of extraordinary applause for the many new and true observations that he made, to the disgrace of so many fabulous Authors that write not only what they do not know, but whatever they hear spoken by the foolish vulgar, never seeking to assure themselves of the same by experience, perhaps, because they are unwilling to diminish the bulk of their Books.

DAS DEXTROCARDIAS: SUBSIDIO AO SEU ESTUDO CLINICO E ELECTRO-CARDIOGRAPHICO. Por Genival Soares Londres. These de concurso para docencia livre de clinica medica da faculdade de medicina da Universidade do Rio de Janeiro. Paper. Pp. 104, with illustrations. Rio de Janeiro: Typ. São Benedicto, 1929.

The essential clinical features of dextrocardia are reviewed in a systematic fashion. The value of this thesis is found in the reproductions of roentgenograms and electrocardiograms. These are of great importance in formulating a diagnosis. In the discussion of electrocardiograms, the axial theory of Waller is stressed. Finally, the clinical and laboratory data of four patients with dextrocardia are described.

DIETETICA. Por el Dr. Rafael Cowley Campondonico, professor ayudante de la cátedra de terapéutica, clínica de la Universidad de la Habana. Prologo por el Dr. Antonio Maria Valdes Dapena, professor titular de la Universidad de la Habana. Paper. Pp. 173. Havana, 1930.

The underlying fundamental facts of dietetics are brought out. The essentials of a diet for a healthy individual are listed and many statistical tables appended. These tables have been copied from numerous authors. There is no bibliography, although the author often refers to other writers. This naturally detracts considerably from the value of the book.

Medicolegal

Defendant as a Compulsory Witness in Criminal Insanity Proceedings

(People v. Lamey (Calif.), 283 P. 848)

Lamey was charged with several crimes. On each count he pleaded "not guilty" and "not guilty by reason of insanity," as permitted by the Penal Code of California. Section 1026 of the Code outlines the procedure to be followed:

> When a defendant pleads not guilty by reason of insanity, and also joins with it another plea or pleas, he shall first be tried as if he had entered such other plea or pleas only, and in such trial he shall be conclusively presumed to have been sane at the time the offense is alleged to have been committed. If the jury shall find the defendant guilty, . . . then the question whether the defendant was sane or insane at the time the offense was committed shall be promptly tried, either before the same jury or before a new jury, in the discretion of the court. In such trial the jury shall return a verdict either that the defendant was sane at the time the offense was committed or that he was insane at the time the offense was committed. If the verdict or finding be that the defendant was sane at the time the offense was committed, the court shall sentence the defendant as provided by law.

On his plea of "not guilty," the defendant was tried by a jury and found guilty. He was then placed on trial before the same jury, on his plea of "not guilty by reason of insanity," and, over objections duly made, he was required to give testimony relating to the issues presented by that plea. From the verdict he appealed to the District Court of Appeals, Second District, Division 1, California, contending that the court erred in compelling him to become a witness during his trial on the plea of not guilty by reason of insanity, contrary to the provisions of the constitution of California, article 1, section 13, which provides that no person shall be compelled, in any criminal case, to be a witness against himself.

In this case, said the District Court of Appeals, under the plea of not guilty the effect of the verdict was in substance that the defendant had committed acts which, if committed by a sane person, would make him guilty of the alleged crimes. For the purposes of that verdict, he was presumed to be sane. Under his plea of not guilty by reason of insanity, the question of his status and responsibility as a criminal remained open and undetermined; that he was a criminal and subject to punishment had not yet been established. Under that plea, that issue was to be tried separately; but it was all in the same case. The second verdict, equally with the first, was necessary before a judgment of conviction could be rendered. Under the former practice, when the defendant relied on his right to introduce evidence of insanity as part of his defense, it was well understood that the state had no right to compel the defendant to testify even on that issue. We do not perceive, said the court, that his rights in this respect are in any way different under the new practice. The change is only one of procedure; it does not effect a substantial right, and it does not take away any constitutional right or immunity.

The court directed, therefore, that the verdict found by the jury on the defendant's plea of "not guilty" stand, but that the verdict found on his plea of "not guilty by reason of insanity" be set aside and that there be a new trial on the issues presented by that plea before another jury.

Loss of Sense of Smell from Trauma

(Sofian v. Douglas (Mo.) 23 S. W. (2d) 126)

The plaintiff, a girl about 19 years old, was knocked down by the defendant's automobile. She was at once taken to the hospital. At the trial, she testified that she had no memory of anything that happened after she had gone to about the middle of the street. She became partly conscious that night or early the next morning. At the hospital, she was attended by Dr. Ernest Sachs, a specialist in brain surgery and a staff surgeon of the hospital. He found the patient semiconscious the morning after she was injured. She had vomited when she was brought into the hospital. There was no evidence of bleeding from either her nose or her ears, and examination of her

nervous system showed nothing abnormal. A roentgenogram taken on admission showed no evidence of a fracture. The diagnosis made at that time was a severe injury to the brain, so-called concussion. The patient continually complained of pains in her head and said that she could not smell. After being in the hospital for about a day, she was given food, which she said she could neither smell nor taste. She vomited on numerous occasions, especially in the first two days. After remaining in the hospital nearly two weeks, she returned home, and shortly thereafter resumed her work as a stenographer. She suffered from attacks of dizziness and never regained her sense of smell to any extent. She brought suit, and in the first trial recovered a verdict for $5,000. On the motion of the defendant, the court granted a new trial, because the plaintiff would not accept $3,500 in settlement. On the second trial, she recovered a verdict for only $1,000, and thereupon filed a motion for a new trial, on the ground, among others, that the amount awarded was inadequate. The trial court granted her motion for a new trial, and thereupon the defendant appealed to the Supreme Court of Missouri, Division No. 1.

Dr. Sachs testified that he had examined the patient twice since she left the hospital. He blindfolded her and tested her sense of smell with such substances as oil of cloves, wintergreen and asafetida. She breathed asafetida for fifteen seconds at least, but she said she could not smell it, and so far as Dr. Sachs could observe, she did not do so. The seat of the sense of smell is in the temporal lobe of the brain. If a person is thrown down on the street with sufficient force to cause concussion, it is perfectly possible to do permanent damage to that part of the temporal lobe that controls the sense of smell. The sense of smell plays a part in the taste or aroma of some foods; that is, some things that we think we taste, we really smell. The loss of the sense of smell is determined subjectively, by tests, not objectively.

Dr. M. W. Hoge, a neurologist, examined the plaintiff on several occasions and tested her sense of smell by having her inhale spirits of cinnamon and of cloves, and tincture of asafetida. He detected no reaction on her part to indicate that she smelled them. In his opinion, the injury could have caused a total loss of smell. From what he found, he believed that there was an intracranial lesion.

Dr. E. J. Norris, a specialist in diseases of the eye, ear, nose and throat, examined the plaintiff twice. He tested her sense of smell by using ether, chloroform, oil of roses and tincture of iodine, but he was unable to elicit from her that she smelled any of them. She was unable to detect any flavors but could taste the four basic qualities, sweet, sour, bitter and salt. He believed that the patient's condition would be permanent.

Dr. Gray Briggs, a roentgenologist, took five roentgenograms of the plaintiff's skull. None of them showed a fracture or anything wrong with the skull. The roentgenograms were taken, however, two years after the injury and therefore might not show a fracture of the cribriform plate that may have occurred.

Dr. William D. Black, a specialist in diseases of the eye, ear, nose and throat, who was appointed by the court to examine the plaintiff, on the motion of the defendant, was of an opinion contrary to that of the other medical witnesses. He found nothing in the nasal passages that would interfere with the general sense of smell. He tested both taste and smell, using oil of roses, turpentine and chloroform. The plaintiff could distinguish salt from sugar and could tell acids such as vinegar. Her taste, Dr. Black testified, appeared to be normal. He used chloroform to test for malingering, because chloroform can be tasted as well as smelled. When the plaintiff told him that she could not smell the chloroform, he told her that she could taste it but could not smell it. Then, Dr. Black testified, she told him that she could taste it but could not say what the taste was like. He knew that any one could detect that it was sweet, and he knew that she could taste sugar, as well as sour, salt and bitter. In his opinion, the plaintiff had not lost her sense of smell.

But, said the Supreme Court, trial courts may pass on the weight of the evidence in considering the size of a verdict, whereas appellate courts do not weigh the evidence in reviewing a law case. Trial courts, in view of their better opportunity to measure the general effect of the trial proceedings on the jury, may infer prejudice and bias from the size of the verdict alone, which, it is held, appellate courts cannot do. In ruling that the verdict in this case was so inadequate as to indicate prejudice and bias, the trial court necessarily concluded that the verdict was for substantially less than it ought to have been under the evidence; in other words, it held that the verdict was so much against the weight of the evidence as to show bias and prejudice. On neither of these grounds, however, would the supreme court be justified in interfering in the present case. The order of the trial court, granting a new trial on the motion of the plaintiff, was therefore affirmed.

Insurance: "Total Disability" Construed.—An insurance policy must be interpreted according to its true character and purpose and in the sense in which the insured had reason to suppose it was understood. The term "total disability" is never given its strict, literal meaning of absolute helplessness or entire physical disability, but rather as inability to do substantially or practically all material acts in the transactions of the insured's business in his customary and usual manner. Where the testimony is to the effect that the insured is suffering from pellagra, that such disease is permanent in nature and that the insured is so disabled by it as to be unfitted for any work, a jury question is presented, if under the policy the insured is entitled to certain monthly payments in event he becomes so "disabled by a bodily injury or disease as presumably to be permanently, continuously and wholly prevented for life from pursuing any and all gainful occupations." This is true even though the evidence shows that the insured does a little office work, while prior to his disability he engaged in farming.—*Ohio National Life Ins. Co. v. Stagner (Ky.), 21 S. W. 289.*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, October 27-31. Dr. W. P. Wherry, Medical Arts Building, Omaha, Secretary.

American Academy of Physical Therapy, Boston, October 22-24. Dr. Thomas L. Smyth, 111 North Eighth Street, Allentown, Pennsylvania, Secretary.

American Association of Railway Surgeons, Chicago, November 5-7. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.

American College of Surgeons, Philadelphia, October 13-17. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.

American Hospital Association, New Orleans, October 20-24. Dr. Bert W. Caldwell, 18 East Division Street, Chicago, Executive Secretary.

American Physical Therapy Association, Chicago, Oct. 6-10. Dr. C. C. Vinton, 1650 Broadway, New York, Secretary.

American Public Health Association, Fort Worth, Texas, October 27-31. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Executive Secretary.

American Roentgen Ray Society, West Baden, Ind., September 23-26. Dr. John T. Murphy, 421 Michigan Street, Toledo, Ohio, Secretary.

Association of American Medical Colleges, Denver, October 14-16. Dr. Fred C. Zapffe, 25 East Washington Street, Chicago, Secretary.

Association of Military Surgeons of the United States, Washington, D. C., Sept. 25-27. Dr. J. R. Kean, Army Medical Museum, Seventh and B Streets, Washington, D. C., Secretary.

Central Association of Obstetricians and Gynecologists, Kansas City and Excelsior Springs, Missouri, October 9-11. Dr. E. D. Plass, University Hospital, Iowa City, Iowa, Secretary.

Central States Pediatric Society, Memphis, Tenn., November 7-8. Dr. A. H. Parmelee, 310 South Michigan Boulevard, Chicago, Secretary.

Delaware, Medical Society of, Dover, Oct. 14-15. Dr. W. O. La Motte, Medical Arts Building, Wilmington, Secretary.

Indiana State Medical Association, Fort Wayne, September 24-26. Mr. T. A. Hendricks, Hume-Mansur Bldg., Indianapolis, Executive Sec'y.

Medical and Surgical Association of the Southwest, El Paso, Texas, November 6-8. Dr. W. Warner Watkins, Box 1587, Phoenix, Ariz., Secretary.

Mississippi Valley Conference on Tuberculosis, Rockford, Ill., October 14-16. Dr. Robinson Bosworth, Box 1005, Rockford, Secretary.

Missouri Valley, Medical Society of the, Des Moines, Iowa, October 15-17. Dr. Joseph D. McCarthy, 107 South Seventeenth Street, Omaha, Secretary.

Nevada State Medical Association, Reno, September 26-27. Dr. H. J. Brown, Box 688, Reno, Secretary.

Pennsylvania, Medical Society of the State of, Johnstown, Oct. 6-9. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.

Southern Medical Association, Louisville, Ky., November 11-14. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Vermont State Medical Society, Burlington, October 2-3. Dr. William G. Ricker, 33 Main Street, St. Johnsbury, Secretary.

Virginia, Medical Society of, Norfolk, October 21-23. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Medical Sciences, Philadelphia

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Normal Urine Sugar in Cystoscopic Examinations. R. Richardson and R. S. Bitter, Philadelphia.—p. 171.
Diabetic Ketosis and Functional Renal Insufficiency. A. F. Coburn, New York.—p. 178.
*Problem of Pulmonary Tuberculosis in Patients with Diabetes. R. Fitz, Boston.—p. 192.
Mitral Stenosis and Measurements of Normals Among Chinese. O. Willner, New Haven, Conn.—p. 200.
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*Psychogenic Factors in Etiology of Ulcerative Colitis and Bloody Diarrhea. C. D. Murray, New York.—p. 239.
*New Interpretation of van den Bergh Reaction. H. F. Snider and J. G. Reinhold, Philadelphia.—p. 248.
*Bacteriologic Studies and Treatment of Chronic Epidemic Encephalitis. W. B. Stewart and M. J. Evans, Philadelphia.—p. 256.
*Futility of Alkali Treatment in Diabetic Coma. I. I. Lemann, New Orleans.—p. 266.

Circulation of Feet in Diabetes Mellitus With and Without Gangrene.—In a series of 100 unselected diabetic patients under treatment Starr found that the response of the skin of the lower extremities to histamine under standard conditions indicated that 32 per cent had a normal circulation in their feet, in 34 per cent the circulation was somewhat impaired, and in 34 per cent it was markedly impaired. The caloric output of the feet was determined thirty times in 8 patients; it was constantly below normal in 6. It is concluded that the majority of patients with diabetes have an abnormally low blood flow through their feet. The types of histamine reaction occurring on the legs of 14 patients with gangrene of the feet are described. The value of this evidence in aiding the selection of treatment and choosing the level of amputation is discussed.

Problem of Pulmonary Tuberculosis in Patients with Diabetes.—Fitz points out that, on the whole, the complication of pulmonary tuberculosis is indeed a serious one for the patient with diabetes. At the present time there are probably in the neighborhood of sixteen thousand diabetic patients in this country afflicted with active pulmonary tuberculosis and of these more than half are likely to die within the first twelve months after the correct diagnosis is established. Pulmonary tuberculosis is particularly prone to develop in the elderly patient of poor circumstances, leading a sedentary life, who has been at one time obese and through inadequate treatment for diabetes has lost weight rapidly. The tuberculosis may begin deep in the hilar region of the lung and at first may not cause signs or symptoms. Before long, however, the tuberculous diabetic patient will develop the usual signs of pulmonary tuberculosis with positive sputum. The pulmonary lesion in its beginning may be unrecognizable except by the roentgen ray but later can be detected easily by ordinary physical diagnosis. Tuberculosis may develop in a diabetic patient while the patient is under treatment. A patient under treatment for diabetes who does not hold his weight or who does not appear to be getting along satisfactorily should be suspected of having tuberculosis. All diabetic patients should be watched carefully and should have repeated physical examinations from time to time in order to forestall future complications. The treatment of pulmonary tuberculosis is unsatisfactory. At best, it is time consuming and expensive, for it requires unlimited rest, fresh air and, in addition, adequate diabetic treatment for a long period of time. There may be apparent temporary improvement under any appropriate therapy but the final prognosis is poor.

Allergic Migraine.—A family history of allergy was elicited in 85.4 per cent of the fifty-five cases studied by Balyeat and Brittain. From a study of the hereditary factor in migraine it appears that it is interchangeable in the linkage with asthma and hay-fever, which is good evidence that these syndromes have a common etiology; namely, a specific sensitization. The exciting factor in migraine is probably always a specific sensitivity to one or more foreign proteins. There are many predisposing factors, such as physical fatigue, mental fatigue and depressed states, thyroid dysfunction, genitosexual cause, toxic states, and disturbance of the special senses. The onset of symptoms occurred in nearly a third of the cases during the first decade. The persistence of migraine symptoms up until and through the sixth decade is not uncommon. Migraine patients are usually above the average both mentally and physically. Treatment should consist of thorough elimination of the foods and dusts to which the patient is found specifically sensitive. Results in the treatment of migraine are as good as or better than those obtained in nearly any other chronic disease.

Multiple Aneurysms of Arteries of Right Arm Associated with Arteriovenous Fistula and Arterial Embolism.—The association of multiple aneurysms of the right brachial, radial superficial palmar, common volar digital and volar digital arteries with an embolus in the radial artery and an arteriovenous fistula of the hand is recorded by Wilbur.

Leukopenia Resembling Agranulocytosis, with Recovery.—Seven cases are reported by Thompson of an acute, transient, infectious disease associated with high fever, low pulse rate, enlargement of the lymph nodes, leukopenia and relative agranulocytosis, the late appearance of queer whitish spots on the posterior pharyngeal wall, and prompt, complete recovery. The etiology is unknown. They represent another variant in the group of infections associated with the agranulocytic type of blood picture.

Psychogenic Factors in Etiology of Ulcerative Colitis and Bloody Diarrhea.—Investigation into the life histories and mental attitudes of a series of twelve patients suffering from bloody diarrheas or ulcerative colitis revealed a close association in time between the emergence of a difficult psychologic situation and the onset of the symptoms. Mental conflicts concerned with marriage were more commonly found than other types of situations that might evoke anxiety. In each case the patients faced their problems in an inadequate, infantile manner. Murray urges that if the pathologic process has not progressed too far a thorough investigation into the patient's life and mental attitude is indicated and may afford opportunity for much needed psychotherapy.

New Interpretation of van den Bergh Reaction.—The type of direct van den Bergh reaction observed in serum depends on the concentration of bilirubin. In the cases reported by Snider and Reinhold an immediate van den Bergh reaction was associated with a high icterus index and a delayed van den Bergh with a low icterus index. The van den Bergh reaction changed from negative to delayed, then to biphasic, and finally to immediate as increasing amounts of bilirubin were added to human serum. Dilution of a jaundiced serum with normal serum changed the van den Bergh reaction of the former from immediate to delayed. The temperature of the reacting materials was shown to be an important factor.

Bacteriologic Studies and Treatment of Chronic Epidemic Encephalitis.—The Pfeiffer bacillus was isolated by Stewart and Evans from nasopharyngeal cultures of chronic encephalitic patients in 100 per cent of cases. The serums of chronic encephalitic patients agglutinated the Hammett strain of the Pfeiffer bacillus in 100 per cent of cases studied. Flocculation tests were also invariably positive with these serums.

No other organism thus far tested has been consistently agglutinated by chronic encephalitic serums. Cultures of the Pfeiffer bacillus isolated from eighteen patients with chronic encephalitis agglutinated their respective patient's serum and also agglutinated the Hammett strain of Pfeiffer bacillus immune serum. The agglutination with the Hammett immune serum was not so high as that of the homologous patient's serum but suggested the existence of a serologic subgrouping. Of the control series the Pfeiffer bacillus was isolated in 46 per cent of nasopharyngeal cultures, and 122 nonencephalitic serums were tested for agglutination. Of these, 114 neither agglutinated nor flocculated the Pfeiffer bacillus. Of the 7 control cases that agglutinated the Pfeiffer bacillus 3 were afebrile, a case of syphilis of the central nervous system, a lenticular degeneration with a questionable history, and a patient proved to be sensitive to the Pfeiffer bacillus. Four febrile cases agglutinated the Pfeiffer bacillus but also agglutinated other organisms. Of 20 cases of chronic encephalitic parkinsonism studied for sinus disease, 18 gave positive results either by roentgen-ray or by clinical examination; 13 of these patients had definite disease of the ethmoids. Of 46 cases of chronic encephalitic Parkinson's disease treated for one month or more with the soluble antigen, 78 per cent showed improvement. This is considered as not due to a nonspecific protein reaction, since the dose of antigen given contains only ninety-four ten-billionths gram of protein.

Futility of Alkali Treatment in Diabetic Coma.—No indication nor excuse for the use of alkali therapy to supplement insulin was found by Lemann in the depth of the coma, in duration before the institution of treatment, in the maximum grade of glycemia, in the lowest value of carbon dioxide combining power of the blood plasma, in grave complications, or in kidney block or concomitant chronic nephritis. Soda can do no good and can do no harm.

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Operative Treatment of Pulsating Exophthalmos. G. M. Dorrance, Philadelphia.—p. 675.
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Ephedrine and Glaucoma. A. Barlow, Philadelphia.—p. 687.
Influence of Brightness of Surrounding Field or Background on Size and Shape of Blind Spot for Color. C. E. Ferree and G. Rand, Baltimore and H. A. Wentworth, Philadelphia.—p. 690.
Phlyctenulosis and Relation to Tuberculosis. M. Goldenburg, Chicago.—p. 699.
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Modified Tendon Tucker. E. N. De Witt, Bridgeport, Conn.—p. 710.

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Eugenic Sterilization in California. P. Popenoe, Pasadena, Calif.—p. 117.

American Journal of Surgery, New York

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Anesthesia and Analgesia by Intravenous Administration of Sodium Amytal. C. G. Heyd, New York.—p. 29.
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Crossed Flexion Reflex of Upper Extremity. L. J. Pollock, Chicago.—p. 358.
*Production of Sleep and Rest in Psychotic Cases. W. J. Bleckwenn, Madison, Wis.—p. 365.
Justifications for and Results of Exploratory Laminectomy. I. Cohen, New York.—p. 373.
Progress in Psychiatry: III. Significance of Klages' System for Psychopathology. F. Wertham, Baltimore.—p. 381.

Production of Sleep and Rest in Psychotic Cases.—Sodium isoamylethylbarbiturate was used intravenously by Bleckwenn in more than fifty cases of all types of psychosis. Patients with all types of mental excitement and agitation fell into profound sleep from its use. Sleep and physical and mental relaxation lasted from twelve to eighteen hours following one injection. The normal sleep following the period of relaxation was the most desirable result obtained in the treatment of acute manias with sodium isoamylethylbarbiturate. The dose varied in individual cases; it averaged from 7 to 15 grains (0.5 to 1 Gm.). Repeated daily doses were effective in several cases.

Blood pressure continued to fall in the first hour following injection and the fall was greater than has been previously reported. As a routine, blood pressure was taken every fifteen minutes until it returned to normal. Feeding by tube and the handling of patients with acute delirium were made easy by this method. Narcosis had to be induced on an empty stomach, and the patient had to be watched until the initial narcosis disappeared.

Archives of Ophthalmology, Chicago

4: 165-308 (Aug.) 1930

Keratoplasty. A. Elschnig, Prague, Czechoslovakia.—p. 165. (Translated by E. A. Vorisek, Chicago.)
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Unrecognized Magnetic Intra-Ocular Foreign Bodies and Legal Aspects. L. Mills and E. C. Jeancon, Los Angeles.—p. 194.
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Control of Tearing by Blocking Nasal Ganglion. S. L. Ruskin, New York.—p. 208.
Radium in Vernal Catarrh. D. Quick, New York.—p. 212.
Dental Infection in Diseases of Eye. W. F. C. Steinbügler, New York.—p. 220.
Infections of Mouth and Relation to Diseases of Eye. H. W. Gillett, New York.—p. 228.
Needle Holder for Cataract Surgery. E. B. Spaeth, Philadelphia.—p. 240.

California & Western Medicine, San Francisco

33: 545-624 (Aug.) 1930

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Roentgen Diagnosis of Pulmonary Tuberculosis in Infants and Children. R. G. Karshner, Los Angeles.—p. 565.
*Colon Resection. E. Gehrels, San Francisco.—p. 568.
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Acute Anterior Poliomyelitis: Epidemic in California. W. M. Dickie, Sacramento.—p. 601.
Sixteenth Century German Medicine: Artzneybuch of Hofmedicus Gäbelthouer. S. L. M. Rosenberg, Los Angeles.—p. 602.
Large Pork Bone in Bronchus: Case. H. J. Hara, Los Angeles.—p. 606.
Rudimentary Gallbladder and Congenitally Absent Common Duct: Case. J. M. Frawley, Fresno and S. H. Mentzer, San Francisco.—p. 607.
Agranulocytic Leukopenia in Relation to Acute Febrile Upper Respiratory Infection: Case. E. R. Lewis, Los Angeles.—p. 607.
New Knee Bandage. M. Wolfson, San Francisco.—p. 608.

Kidney Function in Pemphigus.—Kidney function tests were made by Ayres in eight cases of pemphigus. All of these eight cases showed decreased excretion of phenolsulphonphthalein, the output of which was disproportionally lower when administered subcutaneously, as compared with the intravenous route. One case which showed a normal kidney function early in the disease displayed a steady decline in phenolsulphonphthalein output as the disease advanced. Five cases are cited in which the clinical history or the necropsy examination revealed a disease condition in the liver or the gallbladder. Therapeutic suggestions are offered among which the administration of arsenic is to be used with the greatest caution if at all in cases of pemphigus showing a low phenolsulphonphthalein output. A careful study of the kidney function should be made in every case and no drug should be administered to patients whose kidneys are already badly damaged.

Colon Resection.—Gehrels prefers the Mikulicz operation in most cases. The procedure he recommends avoids the crushing of the spur and closes the artificial anus in one stage from three to six weeks after the main operation. This allows sufficient time for the inflammatory edema of the peritoneum and intestine to subside. This procedure has made the closure of an artificial anus in one sitting a reliable procedure. Of forty-two cases in which this operation was done, only one proved fatal.

Comparative Blood Pressures in Two Arms.—One hundred and twenty-five patients were studied by Kay and Gardner and 500 readings were made. Variation of differences of from 5 to 10 mm. in the systolic and diastolic readings were considered within the normal. One hundred cases, or 80 per cent, were within normal limits, while 25 cases, or 20 per cent, were distinctly abnormal. Fluoroscopy was done in all of these and many of them were radiographically checked. The arteriosclerotic and hypertensive patients more often show these variations. The greatest differences of blood pressures are found in this class of patients, and especially those with angina pectoris and aortitis. The group which is second in importance are those patients who have vasomotor disturbances, such as occur in the menopause. Patients above 45 years have the most marked variations. Sex apparently plays no part. The right arm is highest in the majority of cases. The authors believe that the cause of these differences is varying functional changes occurring in the blood vessels of the two arms.

Acute Pulmonary Edema During Pregnancy and Labor.—The case reported by Bonn did not present a blood pressure extraordinarily high and the albuminuria and edema of the feet were of a transitory type. The prompt appearance of the acute pulmonary edema, after the amniotic sac ruptured, suggests a causal relationship perhaps, as regards either an embolus or a shower of emboli. Bonn suggests that, because of the high mortality of this condition, a patient who has survived a previous attack of acute pulmonary edema occurring during pregnancy, labor or the puerperium, and who has again become pregnant is entitled to a therapeutic abortion. A tubal sterilization at the time of the abortion or later, as circumstances dictate, is also indicated. When acute pulmonary edema occurs during pregnancy or labor and the blood pressure is not unduly high, morphine is indicated. Under like conditions but with a high blood pressure, venesection is to be done. With either of the preceding conditions present, at the first sign of improvement, slight though it may be, the uterus should be emptied. For those cases near term or in labor, the procedure of choice is a classic cesarean section under local anesthesia, performed at the slightest evidence of improvement in the patient's condition, and, at the latest, not longer than from four to six hours after the onset of the edema.

Iowa State Medical Society Journal, Des Moines

20: 283-346 (July) 1930

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Postmortem Examination. G. H. Hansmann, Iowa City.—p. 286.
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Charcot-Marie-Tooth Type of Progressive Muscular Atrophy: Case. C. Van Epps, Iowa City.—p. 296.
Treatment of Osteogenic Sarcoma of Long Bones. W. H. Gibbon, Iowa City.—p. 297.

Medical Journal & Record, New York

132: 105-156 (Aug. 6) 1930

Milk as Food for Human Adults. E. E. Cornwall, New York.—p. 105.
Infant Feeding for General Practitioner. M. Schuman, New York.—p. 109.
Pregnancy with Complications: Bag Induction; Arrested Labor; Occiput Posterior; Scanzoni Maneuver; Episiotomy; Cephalhematome; Agalactia. D. H. Bessesen, Minneapolis.—p. 113.
Convalescent Measles Serum as Specific Therapeutic Measure. H. A. Savitz, Boston.—p. 114.
Tender Areas on Hand as Signs of Visceral Disease. S. P. Sobel, New York.—p. 116.
B C G, Calmette and League of Nations. S. J. Maher, New Haven, Conn.—p. 118.
Practice and Results, Actually Known in France, of Preventive Vaccination Against Tuberculosis in Young Infants, by Use of B C G, from July 1, 1924, to July 1, 1928. A. Calmette, Paris.—p. 119.
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Diagnostics of Penile Lesions. F. A. Diasio, New York.—p. 132.
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Fundamental Principles of Calcium Therapy in Internal Diseases. E. Baráth, Budapest, Hungary.—p. 139.
California Medicine. J. W. Shuman, Los Angeles.—p. 142.

Minnesota Medicine, St. Paul

13: 517-598 (Aug.) 1930

Brain Surgery: Three Cases. A. Schwyzer, St. Paul.—p. 517.
Pericarditis. T. A. Peppard, Minneapolis.—p. 529.
First Infection by Tubercle Bacillus. A. S. Anderson, St. Paul.—p. 540.
*Evulsion of Phrenic Nerve for Pulmonary Tuberculosis. E. K. Geer, St. Paul.—p. 545.
*Treatment of Boils and Carbuncles by Roentgen Rays. E. T. Leddy and S. A. Morton, Rochester.—p. 554.
*Observations on Etiology of Tic Douloureux with Clinical Reports of New Method of Treatment (Pyretotherapy). C. R. Ball, St. Paul.—p. 556.
Modern Treatment of Varicose Veins. J. M. Hayes, Minneapolis.—p. 564.
Analysis of 100 Consecutive Cases of Back Strain. M. O. Henry, Minneapolis.—p. 572.
Myxedema and Diabetes: Case. J. B. Carey, Minneapolis.—p. 578.
Retroperitoneal Hernia: Case. F. H. Stangl, St. Cloud.—p. 580.

Evulsion of Phrenic Nerve for Pulmonary Tuberculosis.—Geer has done phrenic nerve evulsion in the treatment of pulmonary tuberculosis in ninety-three cases. Twenty-eight were in combination with extrapleural thoracoplasty, fifteen of these with the complete thoracoplasty operation, and thirteen in combination with resection of the upper fifth to eighth ribs. Forty-five evulsions were done on persons with upper lobe cavities in whom there was such a definite tendency for the cavities to close after phrenic neurectomy that thoracoplasty was withheld to see what would happen eventually. Twelve of these achieved complete obliteration of their cavities with resultant loss of bacillary sputum. Two others apparently did the same thing within two months, only to have symptoms later with reopening of the cavities. Fifteen have been done too recently to judge results but at this time do not look encouraging. One with an unusually large cavity was allowed to go eight months because of the extraordinary reduction in the size of the cavity but finally was submitted to an upper lobe thoracoplasty with success. Ten patients with unilateral basal lesions have submitted to phrenic nerve evulsion. Five are clinically well. One died of generalized tuberculosis. Another has had the operation so recently that there is uncertainty as to its outcome. One other had a normally moving diaphragm following the operation but did well with eighteen months' rest in bed. Thoracoplasty and pneumothorax were necessary in the other two cases. Thirteen phrenicectomies have been done in conjunction with pneumothorax. Six patients in this series of ninety-three continued to have normal diaphragmatic movement following the operation. Geer feels that phrenic nerve evulsion should precede every thoracoplasty operation for pulmonary tuberculosis, as it does afford increased pulmonary relaxation.

Treatment of Boils and Carbuncles by Roentgen Rays.—In order to evaluate the treatment, Leddy and Morton reviewed the histories of 100 cases in which they knew the outcome of the disease. These comprised 74 cases of boils and 26 cases of carbuncles. For the roentgenologic treatment to be of maximal value, it should be given early in the course of the disease. Boils respond more favorably to treatment than carbuncles. The authors believe that the treatment of boils and carbuncles in the early stage by roentgen rays is the best at the present time and that it should be utilized more frequently.

Etiology of Tic Douloureux with Pyretotherapy.—Ball uses milk as the fever-producing agent. The milk was boiled and allowed to cool and then injected intramuscularly into the buttocks four days in succession, 5 cc. the first day, the dosage being increased on the succeeding days by 5 cc. or a lesser amount according to the degree of reaction obtained. In those cases in which milk failed to react vigorously enough, he used triple typhoid as the foreign protein. He gave the milk four days in succession in order to secure a series of quick reactions. The first injection almost invariably increased the pain. Even during the height of the reaction in the fourth injection, rather severe tic pain was present in some of the cases. In no case was the fever reaction less than 102 F. and in some cases it reached a height of 105. These reactions lasted only a few hours and then quickly subsided. During the treatment and continuing for some time after, he gave a capsule containing from one-half to two-thirds grain (0.03 to 0.04 Gm.) of phenobarbital with 10 grains (0.65 Gm.) of calcium lactate after each meal. In some of the cases during the reaction, morphine or some derivative of it was administered either hypodermically or by the mouth, as needed to make the patients comfortable.

Missouri State M. Assn. Journal, St. Louis

27: 367-424 (Aug.) 1930

Primary Carcinoma of Suprarenals with Metastases in Skin and Myocardium. J. R. Nakada, St. Louis.—p. 367.
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Tumors of Larynx. W. G. Patton, St. Louis.—p. 377.
Primary Carcinoma of Lung: Case. J. Rabinovitch and F. L. Harms, St. Louis.—p. 381.
*Pituitary Extract (Posterior Lobe). A. Sophian, Kansas City.—p. 384.
India Eye Clinics. A. W. McAlester III, Kansas City.—p. 385.
Motor Car Driver's Vision. G. F. Cooper, Kansas City.—p. 388.
St. Louis Pure Milk Commission. I. Wollman, St. Louis.—p. 389.
Treatment of Syphilis. J. V. Lawrence, St. Louis.—p. 392.

Pituitary Extract (Posterior Lobe).—Sophian asserts that the nasal spray of surgical pituitary extract in small doses is easily controlled and produces a physiologic bowel movement with a feeling of function completed and no after-irritation. Doses of 0.5 cc. once, twice or three times a day are effective in producing one or more bowel movements, usually in from one to seven hours after the use of the spray. Large doses produce cramps. The spray has been used to produce bowel movement in postoperative general abdominal and intestinal cases, in atonic bowel, in ordinary constipation, and in spastic constipation; also in bowel adhesions with local retention. The results are surprisingly uniform and the physiologic effect is most excellent. The cooperation of the patient for other dietetic and mechanical measures is easily obtained. The experience with the intranasal spray so far is that after a few days the dosage must be reduced, which is particularly encouraging, especially in cases of simple constipation in which the normal physiologic bowel movement with suitable dietetic measures can be established.

New England Journal of Medicine, Boston

203: 195-246 (July 31) 1930

Bullet in Heart: Case with Recovery. R. Shoemaker and J. C. Eckels, Hatboro, Pa.—p. 195.
*Clinical and Pathologic Study of Chronic Myocarditis. G. Fitz Hugh, Boston.—p. 201.
Treatment of Essential Hypertension. R. S. Palmer, Boston.—p. 208.
Postpartum Eclampsia: Two Cases. B. Tenney, Jr., Boston.—p. 211.
Progressive Athetosis with Lesions in Basal Ganglia: Case. B. Crothers and S. Cobb, Boston.—p. 213.
*Internal Hemorrhoids: Injection Treatment. E. P. Hayden, Boston.—p. 218.
*Relative Antirachitic Activity of Cod Liver Oil and Irradiated Ergosterol (Viosterol). A. D. Holmes and M. G. Pigott, Stoneham, Mass.—p. 220.
Progress in Surgery of Sympathetic Nervous System. J. C. White, Boston.—p. 226.

Clinical and Pathologic Study of Chronic Myocarditis.—A study was made by Fitz Hugh of 228 cases showing myocardial fibrosis, hypertrophy, dilatation or myocardial infarction at necropsy to determine the relation between the clinical course and the condition of the heart at necropsy. In the 228 cases, death occurred in 125 of cardiac failure (cardiac group), 55 of nephritis, 14 of cerebral hemorrhage and 34 of miscellaneous causes making up the noncardiac group. Sixteen of 20 patients with hearts showing marked myocardial fibrosis died of cardiac failure. Thirteen per cent of the hearts in the group with cardiac failure had marked myocardial fibrosis, 20 per cent had marked arteriosclerotic thickening of the small blood vessels, and 46.4 per cent had marked arteriosclerotic thickening of the coronary arteries. These percentages were distinctly less in the noncardiac group. There was no preponderance of cardiac over noncardiac cases for degrees of damage less than the marked degree described. There was only a rough correlation between myocardial fibrosis, arteriosclerotic thickening of the coronary arteries, and of the small vessels in the heart studied. Heart failure is more common in the group with hearts weighing 600 Gm. or more. Aside from the fact that the body weights were small, there was no unusual feature in the clinical history or necropsy observations in patients dying of myocardial failure with hearts weighing 350 Gm. or less. The average duration of life after the appearance of cardiac symptoms was thirty-two months for the cardiac group (125 cases). It was thirty-three

months for the group with marked myocardial fibrosis. In a group of forty-two cases with an average duration of seventy-nine months, the percentage distribution of myocardial fibrosis was practically the same as in the whole group of 125. Dyspnea was slightly more common and edema slightly less so, as the first symptom in which the hearts showed markedly thickened small vessels. When the coronary arteries were markedly thickened, dyspnea was slightly less common and edema slightly more common; precordial pain was present as the first symptom in 8.9 per cent in this group with markedly thickened coronaries, only 2.5 per cent more than for all cardiac cases. Edema was less frequent when the hearts showed marked myocardial fibrosis. The patients with angina pectoris lived 0.7 year longer than the average duration for all cases. The electrocardiographic changes in hearts with marked myocardial fibrosis were not characteristic. Auricular fibrillation was present in 36 per cent of the cardiac cases. No type of heart showed a marked frequency of involvement. Murmurs were present in 59.2 per cent of the cardiac cases; they were more common with an enlarged heart; 67.02 per cent of the cardiac cases showed hypertension, past or present. The incidence of the different anatomic lesions of the heart was the same as for all cardiac patients. Cardiac infarction occurred in 24.8 per cent of the 125 cardiac cases. Pain was absent in almost half of the cases. Coronary arteriosclerosis was marked in 15.1 per cent more cases in this group. Marked myocardial fibrosis was slightly more common. Arteriosclerotic thickening of the small vessels was almost the same in the two groups. Angina pectoris was present in 12 per cent of the cardiac cases. Hypertension and markedly thickened small vessels were the same in this group as for all cases. The incidence of coronary arteriosclerosis was practically the same.

Injection Treatment of Internal Hemorrhoids.—Hayden reports favorably on the use of 5-10 per cent solution of quinine and urea hydrochloride in water. It is a simple, safe and satisfactory method when intelligently applied and carefully carried out. It requires no hospitalization, causes little or no discomfort to the patient, and may properly replace surgical removal in the majority of cases.

Relative Antirachitic Activity of Cod Liver Oil and Viosterol.—A determination made by Holmes and Pigott of the antirachitic activity of six samples representing five brands of viosterol 100 D showed that these samples did not possess uniform antirachitic value. It obviously follows that if various samples of viosterol 100 D do not possess uniform potency, they would not have uniformly a hundred times the antirachitic value of a standard cod liver oil. The viosterol 100 D possessing the highest antirachitic activity of those tested had less than sixty times the antirachitic activity of the best cod liver oil tested. It is problematic as to how much the antirachitic activity of the poorer viosterols exceeded that of the better cod liver oils. However, when comparing the therapeutic value of cod liver oil and viosterol, it is always recognized that viosterol has only an antirachitic function whereas cod liver oil possesses this function and is rich in vitamin A as well.

203: 247-294 (Aug. 7) 1930

*Effect of Radium on Cancer of Cervix. J. V. Meigs and F. Parker, Jr., Boston.—p. 247.
*Temperature Reaction Following Subtotal Thyroidectomy. J. Lerman, Boston.—p. 254.
Pneumococcus Meningitis with Recovery. L. J. Lynch, Malden, Mass.—p. 256.
Public Health Administration in Maine. J. A. Tobey, New York.—p. 258.
Diagnosis and Treatment of Hay Fever. J. D. Trask, New Haven, Conn.—p. 268.
Progress in Anesthesia. L. F. Sise and P. D. Woodbridge, Boston.—p. 272.

Effect of Radium on Cancer of Cervix.—Five cases of advanced carcinoma of the cervix were studied clinically and histologically by Meigs and Parker following radium treatment. Daily biopsies, the first taken before treatment was started, were done until no more tumor tissue could be obtained. Histologically, the cases fall into two groups, the first group showing a marked rise in the number of mitoses on the third or fourth day following treatment while the second group shows no such rise. The patients in the first group were all dead at the end of thirteen months, while those in the second group are alive and well more than two years and five months following treatment. It is suggested that the difference in type of reaction following radium may possess some significance as regards prognosis and possibly indicates the need of further investigation with regard to a change in the method of treatment.

Temperature Reaction Following Subtotal Thyroidectomy.—Lerman says that the degree and duration of the temperature reaction following subtotal thyroidectomy for exophthalmic goiter does not bear any relationship to the severity of the disease as judged from the average initial metabolic rate. This reaction is not influenced by the degree of fever present before operation. A slight elevation of temperature, even though it is associated with a mild, protracted upper respiratory infection, is no contraindication to operation. The maximum height of the postoperative temperature reaction does not vary with the season of the year, but the duration of the reaction is definitely longer in the late winter and early spring than in the late summer and early fall.

New Jersey Medical Society Journal, Orange

27: 571-650 (July) 1930

Compensation Act in Relation to Doctors and Practice of Medicine. A. F. McBride, Paterson.—p. 571.
Incidents in a Doctor's Life. E. E. De Grofft, Woodstown.—p. 577.
Interesting Discoveries in Medical Science During Past Hundred Years. H. W. Bauer, Palmyra.—p. 579.
Medical Aspects of Diabetes Mellitus. H. F. Root, Boston.—p. 583.
Principles in Treatment of Diabetes. H. M. Larson, Morristown.—p. 587.
Surgical Aspects of Diabetes. I. F. Frost, Morristown.—p. 592.
Dermatitis Produced by Compound Tincture of Benzoin. B. M. James, Newark.—p. 596.
Injection Treatment of Varicose Veins. H. L. Wenger, Paterson.—p. 600.
Radiation Therapy in Medicine. I. I. Kaplan, New York.—p. 601.

Pennsylvania Medical Journal, Harrisburg

33: 721-804 (Aug.) 1930

Physical Therapy in Dermatology. C. S. Wright, Philadelphia.—p. 721.
Treatment of Pulmonary Suppuration. E. H. Funk, Philadelphia.—p. 725.
*Surgical Treatment of Pulmonary Tuberculosis. H. R. Decker, Pittsburgh.—p. 729.
Importance of Visual-Field Studies After Head Injuries. C. J. McCullough, Washington.—p. 733.
Anatomy and Physiology of Sympathetic Nervous System of Kidney. H. Sangree, Philadelphia.—p. 737.
Theoretical Indications for Renal Sympathectomy. L. F. Milliken, Philadelphia.—p. 738.
*Renal Sympathectomy. E. Hess, Erie.—p. 741.
Acute Nonsuppurative Inflammation of Hip Joint. J. F. Wagner, Bristol.—p. 749.
Increased Intracranial Pressure in Nine-Year-Old Boy. T. H. Weaber, Allentown.—p. 750.
Ascaridiasis Simulating Appendicitis. G. W. Overholser and C. B. Rentschler, Reading.—p. 751.

Surgical Treatment of Pulmonary Tuberculosis.—Decker feels that surgical therapy, by artificial pneumothorax, phrenicectomy and thoracoplasty, is a great boon to many individuals who are otherwise doomed to die of pulmonary tuberculosis. In about 40 per cent of the patients subjected to operation, recovery will be assured; in 25 per cent, improvement will be effected. In the selection of cases for operation, each must be chosen on its own individual merits. Surgery should always be used as a supplementary procedure. After operation it is essential that the routine regimen for tuberculosis be continued until recovery has taken place. Of nineteen patients on whom he did a thoracoplasty, plus a phrenicectomy in seven, seven were markedly improved and five were improved. Six died and one showed no improvement. Of thirteen patients on whom he did a phrenicectomy, only two were markedly improved, five were improved and two died, three remaining in statu quo. Four operations were done too recently to report results.

Renal Sympathectomy.—Hess offers sympathectomy, with fixation of the kidney as a result of adhesions secondary to operation, as a procedure in those painful types of floating kidney in which heretofore suspension by various methods has been attempted.

Philippine Islands M. Assn. Journal, Manila

10: 223-262 (June) 1930

Effect of Citrus Limonia Osbeck (Imported American Lemon), C. Aurantifolia (Christm.) Swingle (Dayap), and C. Mitis Blanco (Calamansi) in Water Treatment. R. Macasaet and A. Pio De Roda.—p. 223.
Treatment of Itching, Acne Vulgaris and Pruritus Vulvae with Calamansi Juice (Citrus Mitis Blanco). M. Paz Mendoza-Guazon.—p. 233.
Deficiency in Vitamin A and Nyctalopia. L. Gamboa.—p. 235.
Cardiovascular Rating as Means of Detecting Ill Health. J. Salcedo, Jr., and W. Pascual.—p. 238.
Problem of Campaign for Construction of Adequate Toilets in Control of Cholera, Dysentery, Typhoid Fever and Gastro-Enteritis. T. Corpus. —p. 245.
Ovarian Hemorrhage Simulating Ectopic Pregnancy: Case. H. Acosta-Sison.—p. 248.

Porto Rico J. Public Health & Trop. Medicine, San Juan

5: 407-506 (June) 1930

Aspects of Chemistry of Nutrition in Relation to Health. H. C. Sherman, New York.—p. 407.
Underlying Principles of Public Health Administration. P. N. Ortiz. —p. 433.
Blood Pressure Findings in Porto Rico. W. R. Torgerson, Santurce, P. R.—p. 438.
*Blood Chemistry in Leprosy. P. Morales-Otero and L. G. Hernández. —p. 443.
Experimental Inoculation of Monkeys (Silenus Rhesus) and Guinea-Pigs with Two Dermatophytes and One Blastomycoides. B. K. Ashford, E. B. McKinley and G. B. Dowling.—p. 452.
Deficiency Diseases and Vitamins. E. B. Vedder.—p. 458.
Blood Pressures in 250 Cases in Porto Rico. B. K. Ashford and G. B. Dowling.—p. 477.

Chemical Studies of Blood in Leprosy.—The results of chemical studies of the blood of fifty lepers with regard to chlorides, cholesterol, serum calcium, phosphorus and the icteric index is reported by Morales-Otero and Hernández. Leprosy in itself affects very little, if at all, the concentration of serum calcium, blood chlorides or phosphorus, regardless of the type, extent or duration of the disease. If a definite increase of these ingredients is found in leprosy, it is usually due to some other concurrent condition. Cholesterol was found to be slightly reduced in lepers when compared with normal groups. Usually the group of cases treated with the ethyl esters of chaulmoogra oil had slightly higher cholesterol values than the untreated cases or those treated by other methods.

Public Health Reports, Washington, D. C.

45: 1573-1655 (July 11) 1930

Public Health Survey of Iowa. A. J. McLaughlin.—p. 1573.
Water Purification: IV. Effects of Certain Modifications in Coagulation Sedimentation on Bacterial Efficiency of Preliminary Water Treatment in Connection with Rapid Sand Filtration. H. W. Streeter.—p. 1597.

45: 1657-1701 (July 18) 1930

Prevalence and Trend of Meningococcus Meningitis in United States. R. C. Williams.—p. 1657.
Recent Progress in Studies of Undulant Fever. H. E. Hasseltine.—p. 1660.

45: 1703-1762 (July 25) 1930

Pharmacologic and Chemical Studies of Cause of So-Called Ginger Paralysis. M. I. Smith and E. Elvove.—p. 1703.
Relation Between Trypanocidal and Spirocheticidal Activities of Neoarsphenamine. T. F. Probey and G. W. McCoy.—p. 1716.

Texas State Journal of Medicine, Fort Worth

26: 199-270 (July) 1930

Gnats and Camels in Public Health. H. N. Calver, New York.—p. 209.
State's Relation to Practice of Medicine. W. J. Bell, Toronto.—p. 212.
Morbidity and Vital Statistics in Relation to Public Health. R. C. Williams, Washington, D. C.—p. 216.
Texas and United States Registration Area. W. A. Davis, Austin.—p. 219.
Looking Back on Cuban Sanitary Progress. A. Agramonte, Havana, Cuba.—p. 223.
Early Diagnosis of Malignant Tumors. B. T. Terry, Rochester, Minn. —p. 227.
Factors Concerned in Prevention of Uterine Cancer. P. B. Bland, Philadelphia.—p. 232.
Sodium Amytal Anesthesia in Gynecology. C. Kelley, San Antonio. —p. 239.
Use of Sodium Amytal in Obstetrics. W. E. Massey, Dallas.—p. 241.
Controllable Spinal Anesthesia in Obstetrics. W. M. Bailey, Tyler.—p. 244.
Encephalography. T. H. Harris and A. Hauser, Galveston.—p. 246.
Criminally Insane: Discussion of Etiologic Factors and Need for State Hospital. J. S. Turner, Dallas.—p. 255.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 129-168 (July 26) 1930

Observation and Experiment and Use in Medical Sciences. W. Trotter. —p. 129.
*Infection by Anaerobic Streptococci in Puerperal Fever. L. Colebrook.—p. 134.
*Effect of Auricular Fibrillation on Operative Risk in Hyperthyroidism. J. Hoskin.—p. 138.
Urethral Calculi: Ancient and Modern. A. L. Urquhart.—p. 139.
*Pneumonia and Empyema Due to Non-Lactose-Fermenting Bacillus. A. D. Frazer.—p. 140.
Congenital Dislocation of Knees Treated by Manipulation. G. Hamada. —p. 141.
Vitamin A Content of Ghee. A. L. Bacharach.—p. 141.
*Gallstones Passed Through Sinus in Back. F. H. McCay.—p. 142.

Infection by Anaerobic Streptococci in Puerperal Fever.—Anaerobic streptococci have been isolated by Colebrook from the blood of 17 puerperal fever patients and from the pleural effusion of 1 other patient whose blood was sterile at the time of culture. In 8 of the 17 cases the blood culture gave a mixed growth—of two types of anaerobic streptococci or of anaerobic streptococci with other species. The incidence of these 17 cases has not been such as to suggest a contagious origin of the infection. Ten of them had required intra-uterine manipulations during labor. Seven of the patients died (mortality 39 per cent). Septic thrombophlebitis was found post mortem in 4 cases and infarction in 2 others. Suppuration occurred during life, or was found post mortem, in 9 cases, anaerobic streptococci being always recovered from the pus. Thirteen of the 17 cases of generalized infection by anaerobic streptococci have occurred at Queen Charlotte's Hospital. During the same period there have been only 6 cases of septicemia (possibly 7) due to hemolytic streptococci at this hospital (3 fatal). The nineteen strains of anaerobic streptococci isolated from the blood of patients appear to form a heterogeneous group. Some of them conform to the *Streptococcus putridus* type described by Schottmüller, while others do not. The technic of blood culture which has proved suitable for the isolation of the anaerobic streptococci is described. The view is expressed that puerperal infection by anaerobic streptococci probably occurs much more frequently in this country than has been recognized, and that failure to detect the generalized infections has resulted from the use of unsuitable blood culture methods.

Effect of Auricular Fibrillation on Operative Risk in Hyperthyroidism.—Hoskin is convinced that auricular fibrillation occurs rather more frequently in toxic than in exophthalmic goiters. Its presence in exophthalmic goiters is more serious than in toxic goiters, as shown by the increased postoperative mortality. Auricular fibrillation is not of itself a contraindication to operative treatment, although it is an added risk. The need for thorough preoperative medical treatment is intensified by the presence of auricular fibrillation. Primary ligation deserves careful consideration as a means of treating severe cases. In most cases, when one or more of the thyroid vessels have been tied, the improvement in the general and cardiac condition of the patient has allowed the major operation to be performed without undue risk.

Pneumonia and Empyema Due to Non-Lactose-Fermenting Bacillus.—Frazer reports a case of pneumonia and empyema apparently caused by a non-lactose-fermenting coliform bacillus possessing special biochemical and agglutinative characteristics. Three specimens of pus aspirated from the pleural cavity on different dates were examined, and a gram-negative bacillus was isolated on each occasion, giving the same biochemical and agglutination reactions. While the organism has, antigenically as well as biochemically, something in common with *Bacillus paratyphosus* B and *B. aertrycke*, it is distinct from these organisms. The clinical course of the infection bears a striking resemblance to that of many cases of psittacosis. The sudden "influenzal" type of onset, the dry cough, the slow pulse and respiration rate compared with the high temperature,

are found in psittacosis, but there is no history in the case of contact with a parrot, and the organism differs from the strains which used to be considered the cause of psittacosis. The organism is therefore closely allied to the *paratyphosus* B-*aertrycke* group, but differs materially from these organisms in failure to ferment dulcite and in its specific serologic qualities.

Gallstones Passed Through Sinus in Back. — McCay reports the case of a woman, aged 74, who for four years had been having attacks of stabbing pain in the right side of the abdomen and between the shoulder blades. At first the attacks were not very severe, but the last two had persisted for twenty-four hours and had been associated with jaundice and the passage of clay-colored stools. Altogether there had been about a dozen attacks. Two months before admission, an abscess appeared in the left lumbar region. This was lanced and has discharged thin, yellow pus since, and also, at irregular intervals and independently of the attacks of pain, six faceted gallstones, each about the size of a pea. Bile, urine or feces was not present in the discharge, which often amounted to 2 ounces in the twenty-four hours. The opening of the sinus in the back was opposite the spine of the second lumbar vertebra and 2 inches lateral to it on the left side, and admitted the point of a fine probe. At operation, under gas-oxygen and ether anesthesia, the gallbladder was found to be only a small fibrous remnant but it contained one gallstone. The wound was closed with drainage. Postoperative vomiting was severe, and on the third day bile began to discharge from the wound. After three weeks the bile ceased to flow, and after two months the patient was discharged. Her general condition was excellent.

Lancet, London

2: 227-280 (Aug. 2) 1930

Syphilis of Heart and Great Vessels. I. C. F. Coombs.—p. 227.
*Proteose in Urine Excreted in Anaphylactic and Allergic Conditions. G. H. Oriel and H. W. Barber.—p. 231.
*Permanent Hemianopia in Migraine and Subarachnoid Hemorrhage. W. J. Adie.—p. 237.
Vascular Link Between Pituitary and Hypothalamus. G. Popa and U. Fielding.—p. 238.
Gastrojejunocolic Fistula with Edema. F. J. Poynton and J. V. MacGregor.—p. 240.
Charcot's Arthropathy of Sacro-Iliac Joint. H. Avery.—p. 241.
Improved Open Ether Inhaler. W. S. Sykes.—p. 242.
New Pattern Lipiodol Trocar and Cannula. J. B. Christopherson.—p. 242.
Improved Form of Steinmann's Pin. J. H. Cyriax.—p. 242.

Proteose in Urine Excreted in Anaphylactic and Allergic Conditions.—The preparation and chemical properties of the substance, excreted in the urine and responsible for the ether reaction, to which reference was made by Oriel in a previous communication, is described by Oriel and Barber. This substance, which they have termed urinary "proteose," is of complex composition. Although present in small quantity in the urine of persons apparently in average normal health, it is found in relatively large amounts in acute and chronic microbial infections and admittedly allergic states, and in various other unsuspected or manifest conditions of ill health. In allergic diseases it would appear to contain the specific antigen to which the symptoms are due. The course and urinary observations in a case of serum sickness are detailed together with experiments designed, according to the Prausnitz-Küstner method, to establish the presence of specific antigen in the urinary proteose. The significance of the proteose is discussed in relation to experimental observations in animal anaphylaxis, and the view is put forward that in chronic or recurrent allergic states in which the symptoms cannot be ascribed to hypersensitiveness toward one or more known specific antigens the antigenic moiety of the proteose may be a secondary antigen, produced by the sensitized liver (and possibly by other tissues) on contact with diverse primary antigens. In this case it would correspond to the anaphylotoxin of Manwaring. It is suggested that the manifestations of certain chronic diseases may be caused by sensitization toward such secondary antigens. The results of the therapeutic application of urinary proteose, in certain diseases of the skin, by means of intradermal and subcutaneous injections of it in high dilution are recorded. The rationale of dextrose therapy is also discussed. The importance of urinary proteose lies in the fact that it is a definite substance which in some acute and chronic diseases appears to contain the specific antigen on which the symptoms depend and can therefore be employed for specific desensitization in measured doses.

Permanent Hemianopia in Migraine and Subarachnoid Hemorrhage.—Adie asserts that there is an intimate relation between migraine and spontaneous subarachnoid hemorrhage. This conclusion is based on the following set of observations: Migraine with classic symptoms of long duration is sometimes complicated by homonymous hemianopia and other hemi-defects, usually left-sided. In these cases, as in uncomplicated migraine, the visual hallucinations appear sometimes on one side, sometimes on the other, but much more frequently on the left side; nonvisual sensory hallucinations sometimes precede the headache in persons who ultimately have hemianopia. Patients with a long history of migraine and epilepsy may come with permanent hemianopia and other focal signs. These may appear (*a*) after an attack of migraine, (*b*) after an attack in which consciousness is lost, or (*c*) after an attack unlike these—e. g., with "dizziness" only. Patients with an exactly similar history may have subarachnoid hemorrhage. The symptoms in spontaneous subarachnoid hemorrhage are usually those of diffuse cerebral irritation or compression, but signs of a unilateral focal lesion may be present in the acute phase, focal signs may persist after an acute phase with signs of diffuse meningeal irritation, and a hemi-defect—e. g., hemianopia—may appear suddenly with no more general disturbance than a headache in a person who is known to have survived an attack of subarachnoid hemorrhage in the past. Migraine is a not uncommon precursor of spontaneous subarachnoid hemorrhage. Two of Adie's cases—one proved by examination of the cerebrospinal fluid, the other by necropsy ("congenital" aneurysm)—gave a long history of migraine with right and left sided hallucinations. He is inclined to the belief that some recurring disturbance of the cerebral circulation whose nature is at present unknown may, in minor form, manifest itself in symptoms for which migraine and epilepsy are convenient labels and, in major form, lead to infarction of the cerebral cortex or hemorrhage into the subarachnoid space.

Medical Journal of Australia, Sydney

2: 71-106 (July 19) 1930

Investigations on Bacillary Dysentery in Infants: Bacteriophage Phenomena. F. M. Burnet, M. McKie and I. J. Wood.—p. 71.
Apparatus for Radium Teletherapy on Principle of Ferris Wheel. W. Moppett.—p. 79.
Pathologic Lesions and Vital Statistics of Australian Natives in Central Australia. J. B. Cleland and H. K. Fry and B. G. Maegraith.—p. 80.
*Eclampsia and Results of Liver Therapy. R. F. Matters.—p. 83.
Persistent Nasal Discharge and Chest Complications in Children, Due to Infection of Maxillary Sinuses. J. P. Findlay.—p. 84.
Rodent Carcinoma of Neck with Penetration of Lung and Spinal Canal. R. A. Willis.—p. 87.
Pregnancy within Three Months of Intra Uterine Application of Radium. B. Dawson.—p. 88.
Relief of Cardiac Edema by Pineapple Juice. B. G. Maegraith.—p. 88.

Eclampsia and Results of Liver Therapy. — In preeclamptic and eclamptic states, Matters has administered liver in the form of extract in amounts equivalent to 240 Gm. (8 ounces) of the fresh liver per diem. It is given in four doses throughout the day. In antenatal cases the preeclamptic patient is completely rested in bed and the diet is restricted to milk foods and fruit juices. Eliminative treatment is then instituted and liver extract equal to 180 Gm. (6 ounces) of fresh liver is given daily. Patients with true eclampsia are kept quiet in a darkened room and are given eliminative treatment. The stomach also is washed out until the fluid returns clear and then the equivalent of 120 Gm. (4 ounces) of fresh liver is introduced through the stomach tube. The cases treated gave results which were better than those normally obtained. No fatal case occurred in this series. The general treatment is that used at the Rotunda Hospital, the liver being the only difference. It is possible, therefore, that the results are not entirely due to the liver per se but may be largely the result of elimination. It is considered, however, that the liver is the factor that has produced such good results.

Nourrisson, Paris

18: 137-208 (May) 1930

*Buttermilk as an Infant Food. A. B. Marfan.—p. 137.
*Utilization of Vegetable Proteins as Infant Food. L. Ribadeau-Dumas, R. Mathieu and L. Willemin.—p. 161.
Recurrent Asphyctic Syndromes Caused by Laryngotracheal Stenosis and Hypertrophy of Thymus. J. J. Leunda.—p. 178.

Buttermilk as an Infant Food.—A process for preparing buttermilk for infant feeding is fully described by Marfan. He measures and compares its nutritive values, describes the character of the digestion and the nutritive changes in a child fed with buttermilk, gives directions as to its use in the feeding of healthy as well as of weak and hypothreptic infants, and warns against its use in case of constipation, acute diarrhea and the toxic phase of choleriform diarrhea.

Vegetable Proteins as Infant Food.—The aleuron content of oleaginous seeds considered as a nutritive substance was pointed out by André in 1928 and the product made from sunflower seeds was cited as being typical. Much earlier Hartig had discovered in such seeds a sort of flour free from starch, consisting essentially of protein substances formed of granules to which he gave the name of granules of aleuron. Duchartre later stressed the nutritive quality of these granules and Pfeffer showed their richness in albuminoids as well as in phosphorated organic combinations associated with such mineral bases as lime and magnesium. Up to the present, oleaginous grains have been used chiefly for the oils that they yielded. By an improved method André finally obtained from sunflower seeds a pure product that could be used in alimentation. Perfect extraction of the fat leaves a substance rich in pure aleuron. These facts, with a chemical analysis, are summed up by Ribadeau-Dumas et al., who consider the product capable not only of supplementing nitrogen deficiencies in the diet but also of balancing the rations of a diet demanded by the gastro-intestinal disturbances of infancy. With the aim of establishing the presence or absence of vitamins A and B, as well as the quantitative and qualitative value of sunflower seed proteins introduced into a nutritive diet, experiments were first conducted on white rats. These showed that vitamin B was present, A lacking; also, that the seeds had a high quantity of protein but it was insufficient in quality. Good results were obtained, however, with the addition of lactalbumin or of brewers' yeast. Consequently the authors regard vegetable albumins as applicable to the dietetics of infancy provided their biologic character be kept in mind. They therefore give the content and method for preparing a suitable gruel followed by a description of the results of a diet of sunflower seed proteins given over a period of more than a year, to about 100 children, aged from 3 months to 2 years, who were suffering from digestive disorders. Fats were not found to be a satisfactory supplement to the diet. The addition of milk, and of brewers' yeast did yield satisfactory results. After a number of experiments on diet as related to the health and growth of their patients, the authors concluded that the aleuron of sunflower seeds contained the necessary proteins, phosphorus, lime, and various salts. But for a diet conducive to growth, sodium chloride, vitamin B and amino-acids were required. Until more definite information is obtained on the exact character of the deficiency in sunflower proteins, the authors advise the addition of fruit juices and of cod liver oil to the diet of the sick child.

Presse Médicale, Paris

38: 809-824 (June 14) 1930

*Diagnosis of Periodic Vomiting with Acetonemia: Recurrent Vomiting Due to Stenosis of Duodenum. A. B. Marfan.—p. 809.

Diagnosis of Periodic Vomiting with Acetonemia: Recurrent Vomiting Due to Stenosis of Duodenum.—Periodic or cyclic vomiting with acetonemia is a disease of childhood characterized by vomiting attacks that are accompanied by the elimination of acetone and of ketone bodies. It occurs, in general, in young patients in good health, lasts from several hours to several days, and ceases suddenly. Rarely does the malady manifest itself in a single attack; after a certain length of time a second attack almost always ensues, followed by others. The interval between the attacks is variable, and there is rarely any regularity in their return. Marfan's study of periodic vomiting with acetonemia includes a number of case histories. It seems that the disease appears most often between the ages of 1 and 6, disappearing in the prepubertal period. The causes and pathogenesis still present obscure points. In children that are predisposed, the attacks may appear spontaneously or may be provoked by some special cause varying in different children, and from one attack to the other. One of the most widely maintained theories concerning the cause of periodic vomiting is that it is due to acute attacks of chronic appendicitis. This theory is rendered untenable by the number of cases in which patients continue to suffer from the malady after an appendectomy. Apparently the two diseases may coexist and if the first decreases with an operation for the second, other factors—diet, nervous shock—may be the determining agents. Recently, however, it has been noted that compression of the duodenum was the cause in a number of cases. Miller and Gage, in a study on gastromegaly and chronic duodenal stenosis in children, observe a number of cases of isolated vomiting after meals. These are often preceded by severe pains; in some cases of long standing, vomiting may occur in attacks resembling cyclic vomiting. They disappear when the quantity of food is decreased. The number of facts and the cases adduced lead to the conclusion that recurrent vomiting can be caused by a stenosis of the duodenum or traction exerted on it by the mesenteric pedicle or by peritoneal adhesions. However, various aspects of the malady still call for clarification. Meanwhile it is important to learn whether stenosis of the duodenum can explain all cases of periodic vomiting in childhood. The author states that, as a result of careful analysis and of roentgen examination of the abdomen (pending further research), periodic vomiting should not be confused with the recurrent type due to stenosis of the duodenum. If it were, one would be called on to explain the appearance of acetonemia before the vomiting; likewise its spontaneous and definite disappearance prior to puberty. One would also have to explain why in some cases, instead of vomiting, there is a comatose sleep, an attack of convulsions, or of transient fever with decided acetonemia, and, furthermore, why in that case the diet and treatment founded on the theory adopted by Marfan is so often and so rapidly followed by notable improvement and even recovery. It seems clear, therefore, that periodic vomiting with acetonemia is distinct from the recurrent form due to duodenal stenosis, and the most careful efforts should be made to distinguish the two. As their diagnosis is difficult and further complicated by the possible relationship with appendicitis and the necessity of clear distinction, a careful discrimination is urgent. Therefore every child suffering from recurrent vomiting should first be given a complete thorough clinical examination.

Revue Médicale de la Suisse Romande, Lausanne

50: 321-384 (May 25) 1930

Lymphogranulomatosis: Etiology, Microscopic and Clinical Pictures, Prognosis and Treatment. M. Askanazy.—p. 321.
*Carbon Monoxide Poisoning Without Gas Being Extinguished by Wash Boiler Over Flame. F. Naville and C. Soutter.—p. 336.
Arthroplasty as General Method of Treatment for Ankylosis. C. Cornioley.—p. 342. C'td.

Carbon Monoxide Poisoning Without Gas Being Extinguished.—The cause of four cases of fatal carbon monoxide poisoning under somewhat similar circumstances was investigated by Naville and Soutter. In each case the victims were found in or near a room in which a washer had been left to boil over a gas burner. A blood test showed 16.5, 16, 18, and 20 per cent, respectively, of carbon monoxide present. As there was no odor of fuel gas in the rooms, a search was promptly made to discover the source of the poisonous gas. A simple experiment was performed under the same conditions that obtained in the four cases. This revealed that the carbon monoxide was formed immediately and not as a result of prolonged combustion. The steam from the boiler was in no way a contributing factor because, when the experiment was completed, the water in the boiler was scarcely warm. Fuel gas is composed essentially of hydrogen, hydrocarbons and carbon monoxide; the first two burn at a lower temperature than carbon monoxide. The gas flame comes in contact with the bottom of the washer filled with water, spreads out, and

cools. The larger the metallic surface and the amount of water, the lower the temperature of the flame. The hydrogen and hydrocarbons, which are highly combustible, burn completely into water and carbon dioxide but some of the carbon monoxide does not and passes off into the air. This, rather than a close atmosphere, or a deficiency in the oxygen consumed by the flame, was the cause of the four deaths. In the apparent utter harmlessness of all the apparatus involved as well as in the lack of any characteristic odor to warn of the presence of carbon monoxide lies the unsuspected menace, of which the public should be promptly warned.

Policlinico, Rome

37: 905-940 (June 23) 1930. Practical Section

"Postvaccinal" Encephalitis. M. Faberi.—p. 905.
*Scrotal Elephantiasis and Its Surgical Treatment. A. Starna.—p. 913.
Practical Considerations in One Hundred and Ten Cases of Epidemic Parotitis. S. Paolillo.—p. 918.

Scrotal Elephantiasis and Its Surgical Treatment.—Starna reports a case of hemiscrotal elephantiasis of difficult diagnosis, because the tumefaction was associated with fever and presented a fistula communicating with a large suppurative sac of lymphohemorrhagic origin included in the same elephantiasic mass. At the operation, he made two curvilinear incisions, which, extending from the anterior fascia on the left side to below the root of the scrotum, passed downward and left laterally only a small part of the scrotal skin. Thus all the tumefaction and the fistula contained in it were included between the two incisions. He proceeded with the dissection of the mass without opening the right hemiscrotum. Removing the mass, he applied a few silk sutures to the margins of the skin throughout the middle third of the incision, leaving below a gauze drain, which could easily be replaced when the wound was dressed. He allowed the rest of the wound to granulate, with the result that it closed rapidly and completely. There had been no recurrence after twenty months.

37: 257-308 (June 15) 1930. Surgical Section

*True Blood Cyst of Neck. T. Calzolari.—p. 257.
*Retrogasserian Neurotomy in Grave Neuralgia of Trigeminus. A. Chiasserini.—p. 267.
Renal Anomalies. A. Vitale.—p. 276.

True Blood Cyst of Neck.—Calzolari describes a case of true blood cyst of the neck which he regarded as a hematoma. It was without direct vascular communication but in close contact with the internal jugular vein and the innominate vein at the right, and was interesting because of the anatomopathologic observations. He also gives a brief survey of the principal theories formulated to explain the origin of true blood cysts of the neck.

Retrogasserian Neurotomy in Grave Neuralgia of Trigeminus.—Chiasserini reports two cases of neuralgia of the trigeminus in which retrogasserian neurotomy effected a cure. The interventions were executed under local anesthesia and with the oblique temporal incision of Adson. In connection with these two cases, the author reviews the modern problems of the surgical treatment of neuralgia of the trigeminus, considers the evolution of retrogasserian neurotomy, and calls attention to the pathogenesis and the prophylaxis of certain complications observed after the sectioning of the sensory root.

Rivista di Clinica Pediatrica, Florence

28: 457-552 (June) 1930

*Genitodystrophic Geroderma. A. Bardisian.—p. 457.
*Celiac Disease in Young Child. C. de Murtas.—p. 473.
*Insulin in Treatment of Hypotrophic Children. G. Careddu and L. Giua.—p. 487.

Genitodystrophic Geroderma.—Bardisian recalls that, although Souques and J. R. Charcot published in 1891, under the name of cutaneous geromorphism, a number of observations, the merit of having first described genitodystrophic geroderma belongs to Rummo and Ferrarinni (1897). They introduced the study of diseases with pluriglandular symptoms and outlined the pluriglandular treatment. The characteristics of these patients are so evident that they can be recognized at a glance, without even analyzing the genitalia; for, while they present an aged appearance, they are still young. Pluriglandular lesions have always developed at an early (prepubertal) age. The author describes (three illustrations) a child aged 14, who had all the appearance of an aged person (the condition dating from his sixth year) and who presented all the characteristic symptoms of the disease that Rummo and Ferrarinni were the first to describe.

Celiac Disease in Young Child.—De Murtas reports an uncommon observation of chronic diarrhea with excess of fat in the stools (genuine steatorrhea) in a child aged 4, whose physical and mental development was somewhat backward. The personal history of the case, the examination of the patient and the laboratory research enabled the author to diagnose the condition as celiac disease, of which he gives a rapid survey. In discussing the pathogenesis of this syndrome, from what the author has observed personally, he is inclined to assume the existence of a functional disorder of the pancreas. However, he would not deny the importance of dolichocolia as a pathogenic factor.

Insulin in Treatment of Hypotrophic Children.—Careddu and Giua conclude: The behavior of the glycemia in a hypotrophic child, after the ingestion of sugar, presents a slight delay in returning to the values that he presented fasting (about three hours), as compared with what is observed in normal children (only two hours). The hypotrophic child tolerates fairly well, as a result of insulin treatment, lowerings of the glycemic level around 0.04 per cent, but under this limit he begins to present disturbances of hypoglycemia. The insulin treatment seemed to increase the intestinal tolerance for carbohydrates also in children in whom the tolerance for these was notably diminished. The insulin treatment brought about a regular and constant increase in weight, with the formation of good subcutaneous fat layers, improvement of the general condition and of the resistance in hypotrophic children whose weight had been stationary for some time. The insulin treatment appears to have a marked effect on the cutaneous manifestations of exudative diathesis.

Beiträge zur klinischen Chirurgie, Berlin

149: 333-500 (May 14) 1930

*Dupuytren's Contracture of the Fingers. F. Oehlecker.—p. 333.
Exophthalmic Goiter: Preoperative and Postoperative Treatment with Iodine. H. Rahm and M. Haas.—p. 365.
Malignant Epulis. M. Krabbel.—p. 416.
*Treatment of Carbuncle by Parallel Incisions. D. Curri.—p. 421.
*Sedimentation Rate of Erythrocytes in Fractures. M. J. Madlener and H. Bremer.—p. 425.
*Implantation of Pedicled Segment of Duodenum into Large Bowel. H. F. O. Haberland.—p. 432.
Nonincarcerated True Parasternal Diaphragmatic Right-Sided Hernia. D. Curri.—p. 446.
Acute, Diffuse, Phlegmon of Stomach: Two Cases. F. Bauer.—p. 457.
Postoperative Acetonuria. B. Hofmann.—p. 466.
*Inflammation of Bones and Joints: Determination of Site of Disease by Measuring the Temperature Elevation of Overlying Dressing. S. Kusmin.—p. 475.
Diagnostic Value of Roentgen Examinations in Chronic Appendicitis. B. Hüffer and M. Kaspar.—p. 481.

Dupuytren's Contracture of the Fingers.—In the twenty-five cases analyzed by Oehlecker, the ring finger was affected most often; next the little finger; often both fingers. About half the cases were unilateral; the other half bilateral. In the unilateral cases, the fourth and fifth fingers were affected; in the bilateral cases, the index and middle fingers were also affected. In the unilateral cases, the two hands were affected about equally; in the bilateral cases, the right hand was usually more severely affected than the left. The youngest patient was aged 31, the oldest, 74 years. Only two of the patients were women. Twenty years before the development of the contraction both the women had had symmetrical fibromas over the second joint of the second, third, fourth and fifth fingers. No single exciting cause for the contracture could be elicited. Trauma did not appear to be an exciting cause. In three cases a history of heredity was obtained. Operation is indicated only in the severely contracted cases. Kocher's operation is preferred. Lexer's radical operation is rarely ever indicated, and only in the severe cases in which skin transplantation is called for. The author urges that it is most essential to maintain complete extension of the fingers at all times. By doing so, gangrene is avoided.

Treatment of Carbuncle by Parallel Incisions.—Curri has treated thirty-nine cases of carbuncle by means of parallel longitudinal incisions with good results. Each incision extends down to the fascia. They extend outward into the healthy tissue and are from 2 to 4 cm. apart. Each bridge of tissue is then separated from its bed and the resulting cavity is packed thoroughly with gauze. Wet compresses are applied for several days. The separation of sloughs and the outflow of pus commence within two days and then healing proceeds quickly. The cosmetic result is better than in the case of crucial incisions.

Erythrocyte Sedimentation Reaction in Fractures.—Madlener and Bremer confirm Löhr's observations that the erythrocyte sedimentation reaction is increased in all cases of simple fracture. The degree of increase depends on the severity of the fracture and the age of the patient. Not until the fracture is completely healed or until a pseudarthrosis has formed does the sedimentation time return to normal.

Implantation of Small Intestine into Large Intestine.—Haberland has determined experimentally that it is possible to transplant a part of the small intestine with intact mesenteric pedicle into a defect of the large intestine. The transplanted segment does not become necrotic but it gradually takes on the anatomic appearance of the large bowel; the mucosa is no longer that of small intestine; it is that of large intestine. Physiologic and chemical changes were not determined. It is believed that the procedure is applicable in man.

Rôle of the Bandage in Determining Site of Inflammatory Focus in Underlying Bone.—Kusmin shows that it is possible to locate definitely a focus of inflammation or infection in a bone or joint by measuring the temperature of the overlying bandage. Wherever the temperature is highest, immediately underneath this spot will be found the focus of disease. He describes in detail the recording apparatus he uses and his experimental results.

Deutsche medizinische Wochenschrift, Berlin

56: 989-1032 (June 13) 1930

*Reactions at Tuberculous Focus in Lung. G. Leendertz.—p. 989.
*Chronicity of Tuberculous Skin Diseases. O. Dittrich.—p. 992.
Influence of Malaria on Resistance of Organism in Tuberculosis. K. N. Kyriasidis.—p. 995.
*Influence of Diet Deficient in Sodium Chloride on Secretion of Gastric Juice. K. Eimer.—p. 997.
*Chemicobiologic Studies on Patients with Pulmonary Tuberculosis Who Have Been Put on Herrmannsdorfer's Diet. M. Mecklenburg.—p. 1000.
Endothoracic Cinematography. W. W. Siebert.—p. 1003.
Special Indications for Various Methods of Collapse Therapy of Lung. H. Jessen.—p. 1003.
Special Indications for Pneumothorax Treatment and for Phrenic Exeresis. I. Zadek and A. Sonnenfeld.—p. 1005.
Viosterol-Calcium Treatment of Pulmonary Tuberculosis. O. Becker.—p. 1007.

Reactions at Tuberculous Focus in Lung.—Leendertz discusses the nature of the reaction that occurs at a tuberculous focus. He considers it as exudative exacerbation of a productive fibrous pulmonary focus that apparently had become inactive. This reaction of the tuberculous focus may lead either to the cure of the process or to its exacerbation. Significant is the intensity of the reaction, which in turn is largely dependent on the intensity of the exciting stimulant. This stimulation may be produced for therapeutic aims. But the reactivation of a latent focus signifies likewise a focal reaction. The latter is caused by an unintentioned, comparatively too strong stimulant. The author also points out that it is possible to make a roentgenogram of an experimental reaction of the tuberculous focus in the lung.

Chronicity of Tuberculous Skin Diseases, Especially of Lupus Vulgaris.—Dittrich reports two cases of chronic lupus vulgaris. The development and the relapses, respectively, showed an etiologic relation to simultaneously existing, presumably inactive visceral tuberculous foci. An old pulmonary focus gave a positive animal inoculation; a calcified mesenteric lymph node contained many tubercle bacilli. The two cases indicate that the designation inactive tuberculosis should be employed with caution not only with regard to tuberculous processes of the skin but also with regard to those of the internal organs because in the so-called inactive foci, which show signs of cicatrization or of calcification, tubercle bacilli are often found in great numbers and may cause tuberculoid changes in any part of the body.

Influence of Diet Deficient in Sodium Chloride on Secretion of Gastric Juice.—Eimer points out that it is generally assumed that a salt-free diet, which supplies the human organism only with the natural sodium chloride contained in the food, leads to a disturbance in the secretion of the gastric juice, especially to an inhibition of the formation of hydrochloric acid. The influence of a salt-free, raw diet on the chemism of the stomach was investigated by means of fractional withdrawal. However, an inhibition or a disturbance in the gastric secretion could not be detected even when the raw diet had been continued for several months. On the contrary, in the majority of cases the acidity curve showed an upward trend. The human organism adjusts itself to the decreased chlorine supply by limiting the sodium chloride excretion in the urine so that neither in the tissues nor in the fluids does there develop a chlorine deficiency. Consequently there is no cause for an inhibition of the hydrochloric acid formation in the stomach. The stimulating action on the gastric secretion is probably due to juices of the raw fruits and vegetables.

Studies on Patients with Pulmonary Tuberculosis Who Are on Herrmannsdorfer's Diet.—Mecklenburg made chemicobiologic tests on eleven tuberculous patients who were put on Herrmannsdorfer's diet. The patients were examined before and during the dietary treatment. The blood was tested for its alkali reserve and its sodium chloride, calcium and cholesterol contents. The urine tests were made to determine the content in sodium chloride and in ammonia, and the p_H. The examinations of the blood and urine revealed that the diet caused a shifting toward alkalinity, and this is the opposite to what Herrmannsdorfer aimed at. However, to infer from the results of the tests a compensated alkalosis would be to go too far. The author also asserts that Herrmannsdorfer's own experiences likewise did not entirely prove his claims. The changes in the calcium and cholesterol contents of the blood seem to indicate that the efficacy of Herrmannsdorfer's diet is due to the action of the vitamins.

Deutsche Zeitschrift für Chirurgie, Leipzig

224: 281-352 (June) 1930

Catgut: Its Resorption and Incorporation in Healing Process. I. H. Mehnert.—p. 281.
Sterilization of Bandage Material. G. Sobernheim.—p. 294.
Stereophotographic Reproduction of Field of Operation in Natural Colors. L. Drüner.—p. 300.
*A Hitherto not Well Described Typical Intra-Articular Fracture of Elbow Joint. H. Homma and R. Pape.—p. 310.
Enchondroma of Spinal Column in Cervical Region. M. M. Ljachovitzky.—p. 319.
Calcified Intracranial Hematoma. R. Goldhahn.—p. 323.
Oxycephaly Caused by Premature Synosteosis. H. Schmidt.—p. 331.
Hemangioma of Liver. M. Siebner.—p. 339.
External Spontaneous Fistula in Case of Postoperative Peptic Ulcer of Jejunum. H. Recht.—p. 344.
Diverticulum of Small Intestine. M. Gladtke.—p. 345.

Intra-Articular Fracture of Elbow.—Homma and Pape report two cases of fracture of the eminentia capitata (capitulum) of the humerus and of the anterior edge of the trochlea. They state that surgical removal of the fragments is the only treatment to be considered.

Klinische Wochenschrift, Berlin

9: 1105-1152 (June 14) 1930. Partial Index

Prophylactic Tuberculosis Vaccination in Lübeck: Deaths Following Vaccination with B C G Vaccine. L. Lange.—p. 1105.
Immunity Processes in Syphilis: Experimentally Produced Wassermann Reaction. H. Kroó, F. O. Schulze and N. von Jancsó.—p. 1108.
*Nodosis Rheumatica. H. Strauss.—p. 1111.
*Pathogenesis of Thrombosis. B. Stuber and K. Lang.—p. 1113.
*Frequency and Rhythm of Heart Beat Studied by Means of Cardiotachometer. E. P. Boas and E. F. Goldschmidt.—p. 1115.
Tissue Cultivation of Human Skin. K. Börnstein.—p. 1119.
Mechanism of Paroxysmal Cardiac Dyspnea and of Bronchial Asthma. S. Wassermann.—p. 1121.
*Therapy of Postvaccinal Encephalitis. Grüneberg.—p. 1127.

Nodosis Rheumatica.—In a former article Strauss had designated the various forms of nodules that are found in rheumatic diseases with the collective term "nodosis rheu-

matica." Recently he had the opportunity to observe a case of rheumatism with multiple nodules in the region of the elbow joints. The patient died, but because a complete necropsy was not permitted, only several nodules were extirpated for microscopic examination; the knee joints, also, were examined. The microscopic examination of the nodules revealed that they are composed of many smaller nodules and that their primary development is from hyperplastic connective tissue. Secondarily, the center of the nodules becomes necrotic, either simultaneously with or following fatty degeneration and fibrinoid transformation of the collagen. The clinical aspects of the case indicate a probable relation between the nodules and syphilis. The author reported the case mainly in order to demonstrate that the various forms of rheumatic nodules, which he combined under the term nodosis rheumatica, differ widely, especially in regard to etiology. However, he is inclined to believe that not only rheumatic nodules but also gouty deposits and hygromas of the bursae are all of infectious origin. But it will have to be determined whether a specific micro-organism is the cause or whether various micro-organisms may cause this condition under the influence of a special reaction of the tissues. And even if an infection is considered the etiologic factor, such problems as sensibilization and predisposing effects of traumas have to be investigated. The author thinks that rheumatic diseases are a systematic disorder so far as the various mesenchymal tissues are the point of attack of the pathogenic agent.

Pathogenesis of Thrombosis.—Stuber and Lang advance evidence that one of the causes of the increased frequency of thrombosis is the intravenous injection of sugar solutions. Intravenous injections as such are therefore not to be blamed for the recent increase in thrombosis, but rather the specific action of the sugar solution.

Heart Beat Studied by Means of Cardiotachometer.—Boas and Goldschmidt report tests with the cardiotachometer, an instrument that enables one to test the frequency and the rhythm of the heart beat for long periods without limiting the motility of the person examined. The frequency was determined during periods of from twelve to forty-eight hours on a large number of healthy persons and on patients. Tabular reports and diagrams show the results of the tests. Especial attention was given to the tests during sleep. The authors found that the lowest point of the frequency during sleep is the best criterion for the estimation of chronotropism. For clinical medicine the cardiotachometer is a valuable aid, especially in the investigations on the various types of tachycardia. It has been particularly helpful in differentiating between organic and functional disorders. Observations on patients with auricular fibrillation convinced the authors that there are two types: those with a variable and those with a constant frequency. These two types differ from each other not in dissimilarities in the heart itself but rather indifferences in the sympathetic nervous system. In the last part of the article the authors point out that a cardiotachometer with an attachment showing the number of beats a minute would be valuable during operations, in that a glance at the indicator would inform the surgeon about the frequency of the heart beat of his patient.

Therapy of Postvaccinal Encephalitis.—Grüneberg reports the clinical histories of two patients with postvaccinal encephalitis. The first case concerned a boy, aged 12. According to reports, the first vaccination had not been successful. Twelve days after the second vaccination severe cerebral complications became manifest; namely, clouding of mental reactions, somnolence, anomalies in the reflexes and weakness in the left leg. In a girl, aged 1 year and 9 months, cerebral complications, as stupor, anomalies of the reflexes, irregularity of the pulse rate, deep breathing, facial paralysis on the left side, and spasms in the extremities were noted from ten to twelve days after the first vaccination. Because other authors had seen good therapeutic results in postvaccinal encephalitis after an injection of serum from recently vaccinated persons, the author employed this method. The boy was given an intravenous injection of 10 cc. of serum from nurses who had recently been vaccinated. After the first vaccination the patient's condition improved; four days later he was given a second injection of 10 cc. After four weeks the patient had completely recovered. In the case of the girl, 8 cc. of the serum was injected first, and three days later 8.5 cc. was injected. The results were just as favorable as in the case of the boy.

9: 1153-1200 (June 21) 1930

New Methods for Combating Cancer. B. Fischer-Wasels.—p. 1153. C'td.
Quantitative Relation Between Extrarenal Elimination of Water and Metabolic Rate. H. Heller and A. Schwarz.—p. 1158.
*Treatment of Pernicious Anemia with Pulverized Hog Stomach and with Extract from Hog Stomach. E. Meulengracht and A. Hecht-Johansen.—p. 1162.
Studies on Water Metabolism of Skin by Means of Wheal Test. D. Adlersberg and A. Perutz.—p. 1165.
*Treatment of Progressive Muscular Dystrophy by Means of Combined Injection of Epinephrine and Pilocarpine. K. Kuré and S. Okinaka.—p. 1168.
Changes in Glycogen Content of Liver During Menstrual Cycle. C. Kaufmann and O. Mühlbock.—p. 1170.
Diphtheria Vaccination: Experimental Determination of Best Method. F. Wildtgrube.—p. 1171.

Treatment of Pernicious Anemia with Hog Stomach.—Meulengracht and Hecht-Johansen first describe their observations on four patients with pernicious anemia who were treated with desiccated hog stomach. The effect of the treatment was similar to that of liver therapy. However, because comparatively large quantities of the powder have to be given, in order to obtain results, an extract was prepared from hog stomach. The extract did not prove effective.

Treatment of Progressive Muscular Dystrophy.—Kuré and Okinaka first review the literature on the therapeutic value of epinephrine and pilocarpine injections in progressive muscular dystrophy. Then they report their own observations on twelve patients. Regarding the technic, they state that the substances are injected subcutaneously, from 0.2 to 0.3 cc. of a 0.1 per cent solution of epinephrine and from 0.1 to 0.2 cc. of a 1 per cent solution of pilocarpine. The injections are repeated every day or every second day. The usual number of treatments required is between fifty and sixty. Occasionally more are necessary. The authors further discuss the results of the treatment. They found that the treatment is the more effective the earlier it is begun. To exercise the affected muscles is also helpful. For from five to ten minutes after the injection tachycardia generally becomes manifest, but other serious complications were not observed. Even after more than fifty injections, neither hypertrophy of the heart nor increased blood pressure was noted. However, occasionally some of the healthy muscles became hypertrophied. The authors come to the conclusion that although this therapy does not effect a complete cure it nevertheless improves the condition and checks its further progress.

Medizinische Klinik, Berlin

26: 879-914 (June 13) 1930

Pathology and Therapy of Circulatory Disorders. Goldscheider.—p. 879. C'td.
Massage of Prostate: Its Advantages and Disadvantages. J. J. Stutzin.—p. 883.
*Distribution of Fat in Skin of Abdomen: Its Diagnostic Significance. S. Plaschkes.—p. 885.
*Significance of Encephalography for Diagnosis and Therapy of Cerebral Paralysis in Children. L. Guttmann.—p. 886.
Use of Ultraviolet Incandescent Lamp in Disorders of Respiratory Organs. A. Moeller.—p. 887.
Peroneus Pressure Phenomenon and Calf of Leg Pressure Phenomenon. H. Bix.—p. 889.
Treatment of Pulmonary Tuberculosis with Extract of Sheep's Blood. F. Mattausch.—p. 890.
*Efficacy of Irradiation of Spleen in Myeloid Leukemia. A. Rikl.—p. 891.
Relation Between Hemolytic Streptococci and Scarlet Fever. I. Gurwitz.—p. 893.
Usefulness of Solution of Secondary Butylbrompropenylbarbituric Acid in Treatment of Abortion. O. Pollwein.—p. 895.
Instrument for Treatment of Anal Fissure. M. Misch.—p. 896.

Distribution of Fat in Skin of Abdomen: Its Diagnostic Significance.—Plaschkes asserts that the study of the distribution of fat on the abdomen is an aid in the differential diagnosis. If the thickness of the abdominal skin folds that are at right angles to the longitudinal axis of the body is examined, it may be noted that in the lateral portions of the skin the adipose tissue is considerably thinner than in the periumbilical region. The author observed that in persons of

average weight the ratio of the thickness of a lateral skin fold and of a periumbilical skin fold is 1:3; in undernourished persons it is 1:2; in obese persons, however, it is much higher and may reach the ratio 1:10. The determination of extraordinary thickness of the adipose tissue may be evidence against the existence of an intra-abdominal disorder. The reversed condition, that is when the ratio 1:3 is reduced, is also significant. In thin persons the ratio is 1:2. In cases of exceptional undernourishment the ratio may even be 1:1. This condition exists in diarrheal disorders, in pyloristenosis, in tuberculosis and in malignant processes that lead to cachexia. However, the ratio of 1:1 between lateral and periumbilical adipose tissue is found also, whenever there exists an increase in the abdominal contents such as in ascites, in the late months of pregnancy, and in persons with tumors. Accordingly, a large abdomen with a comparatively thin layer of fat speaks for a pathologic process in the abdomen.

Encephalography in Cerebral Paralysis in Children.—The term cerebral paralysis is not applied by Guttmann to a disease entity but is employed as a collective term that includes several forms of cerebral paralysis that are similar in symptomatology but in which the pathologic changes differ widely. He discusses particularly the forms of cerebral paralysis in which hemiplegia is the cardinal symptom. Encephalography of a number of children who showed hemiplegia revealed that the pathologic anatomy differs greatly. The author describes four groups. The anatomicopathologic changes of the first group are cerebral hemiatrophy with true pore formation. The porosity may be internal, external or a combination of the two. It is internal when the defect perforates the ventricle and external when the cerebral cortex is perforated. In the combination form, both ventricle and cerebral cortex are perforated. To the second group belong cases of cerebral atrophy without pore formation. The third group includes the cases with primary developmental disturbances of the brain. Patients in whom the lesion affects not the brain itself but the meninges belong to the fourth group. The author comes to the conclusion that in spite of the limitations of encephalography it is nevertheless helpful in revealing the anatomic changes in cerebral paralysis of children and thus it permits a more exact diagnosis.

Efficacy of Irradiation of Spleen in Myeloid Leukemia.—Rikl points out that roentgen irradiation of the spleen has been considered the most effective therapy of myeloid leukemia ever since the American author Senn observed that it effected a reduction in the enlargement of the spleen and an improvement in the blood picture. However, reports of several authors who employed this treatment indicate that this therapy does not effect a prolongation of the life of the patient with leukemia. The author studied the case reports of thirty-one patients with myeloid leukemia who were subjected to roentgen irradiation of the spleen, and he gives a detailed description of one case. He found that the effects of roentgen treatments are only temporary and that remissions develop. Renewed irradiations will improve the condition again. However, gradually the efficacy of roentgen rays decreases. In the course of years, during which the roentgen treatment has to be repeated, the spleen develops a resistance toward roentgen rays and finally the treatments become entirely ineffective. In the conclusion the author states that roentgen therapy is nevertheless of value if it is employed under careful clinical control.

26: 915-952 (June 20) 1930. Partial Index

Clinical Aspect and Pathogenesis of Rheumatic Endocarditis. K. Brandenburg.—p. 915.
Pathology and Therapy of Circulatory Disorders. Goldscheider.—p. 918. C'cn.
*"Nail Symptom" During Intermittent Claudication. H. Schlesinger.—p. 921.
Tendovaginitis Stenosans: Etiology, Pathology, Diagnosis and Therapy. F. Landois.—p. 927.
*Influence of Vegetarian Diet on Blood Pressure. F. Saile.—p. 929.
Prophylactic Action of Calmette's B C G: Animal Experiments. E. Kuster.—p. 931.

"Nail Symptom" During Intermittent Claudication.—Schlesinger reports the case of a patient, aged 50, with acute ischemia of the right leg, who previously had suffered from intermittent claudication. It was noted that the nails on the right foot grew irregularly and much more slowly than those on the left foot. Since then the author has watched for this nail symptom in persons with intermittent claudication, in those with arteriosclerosis as well as in those with thrombo-angiitis obliterans, and also in patients with syphilitic mesarteritis in the extremities. Anomalies of the nails were noted in only a fraction of the cases; namely, in patients with severe local circulatory disturbances. The author thinks that observation of the nails in cases of intermittent claudication is of prognostic significance. Anomalies in the nails indicate disturbances in the blood supply and show the necessity for measures that will stimulate the circulation in the lower extremities.

Influence of Vegetarian Diet on Blood Pressure.—Because it is generally believed that diets rich in meats cause an increase in the blood pressure, Saile determined the blood pressure of 110 monks who live on an exclusive vegetarian diet and of 115 monks who do not abstain from meat. Tabular reports indicate that not one of the vegetarian monks has a pressure of more than 175, but five of the meat-eating monks have. Eighty-one, or 70.4 per cent, of the monks who eat meat, and only twenty-eight, or 25.4 per cent, of those who abstain from meat have a blood pressure of more than 120. What makes the differences still more marked is the fact that the average age of the vegetarian monks is higher than that of those who eat meat. The author further discusses the mode of living of the various groups of monks, and he comes to the conclusion that the differences in the blood pressure can be caused only by the dissimilarities in the diet. The theory that an hereditary predisposition is a significant etiologic factor in hypertension is not contradicted by the author. However, some external factors are necessary for the development of hypertension and one of the factors is, no doubt, the eating of meat. Accordingly, vegetarian diets are advisable particularly for families in which hypertension is hereditary.

Münchener medizinische Wochenschrift, Munich

77: 1007-1048 (June 13) 1930

Relation Between Blood Group and Predisposition to Syphilis. A. Poehlmann.—p. 1007.
Treatment of Diabetes Mellitus by Means of Perorally Administered Mixture of Insulin and Sodium Desoxycholate. P. Martini and W. Nagel.—p. 1009.
*Action of Enterally Administered Mixture of Insulin and Sodium Desoxycholate. V. van der Reis and G. Schlomka.—p. 1012.
Bacteriologic and Clinical Experiments with Pyridium. O. Köster.—p. 1013.
Pyridium a New Urinary Disinfectant. J. Neuburger.—p. 1016.
Therapy of Postoperative and Puerperal Forms of Thrombophlebitis with Plastic Supporting Bandages. E. Leibholz.—p. 1017.
Reform in Medical Studies. B. Fischer-Wasels.—p. 1022.

Action of Enterally Administered Mixture of Insulin and Sodium Desoxycholate.—Van der Reis and Schlomka tested the efficacy of the enteral insulin therapy as recommended by Stephan. Patients with diabetes mellitus were given a mixture of insulin and sodium desoxycholate. Then careful tests were made. The method proved unsuccessful. Other authors who obtained negative results with the peroral administration of Stephan's insulin preparation were Umber, Rosenberg and Steinitz.

77: 1049-1088 (June 20) 1930

Pathogenesis of Diphtheria. F. Hamburger.—p. 1049.
Negative Phase After Diphtheria Vaccination. J. Siegl.—p. 1054.
Heart Hormone: Investigations on Invertebrates. L. Haberlandt.—p. 1055.
Sterile Catgut. P. Kuhn.—p. 1056.
*Unusual Complications of Influenza. F. Crämer.—p. 1057.
*Relapsing Acute Thyroiditis. E. Becher.—p. 1058.
Brucella Abortus Infection in Man. N. Rsajew.—p. 1058.
Therapy of Atonic Postpartum Hemorrhages. K. E. Fecht.—p. 1060.
Behavior of Procaine Hydrochloride in Cerebrospinal Fluid. W. J. H. Bungenberg de Jong.—p. 1061.
Decline in Mortality Rate: Its Influence on Life Insurance. P. Hörnig.—p. 1062.

Unusual Complications of Influenza.—Following an attack of influenza with severe pharyngeal and laryngeal catarrh, with suppuration of the frontal sinus and with bronchitis and fever, Crämer noted dysgeusia. His tongue was not coated, but all foods and drinks, even fresh water, were without taste. The author thinks that this disturbance in the sense of taste was a result of the toxic products of the bacteria. Therapeutic measures were without effect. Gradually the sense of taste

returned; however, it was never completely restored. Following a previous attack of influenza with nasal catarrh and suppuration of the frontal sinus, the author had lost his sense of smell. After several weeks the condition had improved again. Other complications that the author noted after the influenza were slight attacks of gout, temporary disturbances during urination and intercostal neuralgia.

Relapsing Acute Thyroiditis.—Becher points out that acute thyroiditis develops frequently as a complication of sepsis, influenza, pneumonia, erysipelas, typhoid, malaria, dysentery, cholera, syphilis and tuberculosis. However, it may also develop as a disease entity. In many instances thyroiditis presents the clinical aspects of tonsillitis. The author describes the case of a man, aged 36. In recent years the patient had frequent attacks of sore throat. These were usually followed by attacks of tachycardia and by nervous irritability. Once during an attack of sore throat the patient noticed that the region of the thyroid was sensitive to pressure, and it was found that always during these attacks the size of the neck increased for two or three days and then decreased again. During these days the patient had pains while swallowing which were of the same type as in cases of inflammation of the throat. The case was now diagnosed as acute thyroiditis. The attacks recurred sometimes after short intervals and sometimes the intervals were longer. The author further discusses various methods of treatment.

Wiener klinische Wochenschrift, Vienna

43: 737-768 (June 12) 1930

Treatment of Pregnancy Toxicoses. F. Kermauner.—p. 737.
Causal Parasite of Cancer in Mice. M. M. Newiadomski.—p. 741.
*Modification of Sweat Secretion in Animals Fed with Liver. A. Fröhlich and E. Zak.—p. 746.
Dural Endothelioma and Hyperostosis. A. Winkelbauer.—p. 748.
Factor Responsible for Curative Value of Sauerbruch-Herrmannsdorfer-Gerson Tuberculosis Diet. O. L. E. de Raadt.—p. 752.
*Ossified, Traumatic Epithelial Cyst on Tip of Tongue. J. Pollack.—p. 753.
Dengue Epilepsy. K. Tsiminakis.—p. 755.

Modification of Sweat Secretion in Animals Fed with Liver.—Fröhlich and Zak point out that other authors had observed that in healthy persons as well as in patients liver diet acts as a diuretic, and that in dogs the injection of liver extract also stimulates diuresis. In experiments on cats the authors investigated whether the feeding with liver increases also the sweat secretion. The results of the tests are evidence for a relation between ingestion of liver and increased sweat secretion. The authors come to the conclusion that feeding with liver produces changes in the water metabolism.

Ossified, Traumatic Epithelial Cyst on Tip of Tongue.—Pollack reports the case of a man, aged 66, who, ten weeks before he was hospitalized, first noticed a small whitish vesicle on the tip of the tongue. The vesicle was painful, especially during the ingestion of warm food and during smoking. Gradually it developed into an ulceration that was refractory to treatment. Then the patient asked medical aid at the surgical clinic. The ulceration was excised and a microscopic examination was made. It was found that the outer layers of the small nodule consisted of connective tissue and of separated striated muscle fibers. These capsular layers enclosed an oval formation that consisted of a network of small bony structures. The author further describes the various cell forms that were detected following staining. The author thinks that at first the cyst was a nodule that consisted of pavement epithelium and which became necrotic and calcified. Secondarily it came to the formation of connective tissue in the interior of the growth and this was followed by ossification. The ossification was probably due to the fact that the connective tissues, which filled the traumatically caused gaps between the epithelial masses, were insufficiently nourished and therefore underwent retrogressive changes and finally, by metaplasia, formed bone tissue. Nothing definite can be stated concerning the pathogenesis of the epithelial cell columns, but a traumatic cause seems the most probable. Following calcification and ossification, the nodule caused the superficial ulceration by its mechanical irritation. The ulcer together with the advanced age of the patient made a malignant growth appear probable. This circumstance gives the case a practical significance.

43: 769-800 (June 19) 1930

Education of Medical Student in Pediatrics. F. Hamburger.—p. 769.
Behavior of Pulse in Persons Climbing for First Time the High Mountains of Bolivia. H. Hörtnagl.—p. 774.
*Acetonuria of Cerebral Origin. H. Bix.—p. 778.
Swallowed Fork Removed by Gastrotomy. K. Urban.—p. 780.
*Prevention of Postvaccinal Encephalitis. H. Ogrinz.—p. 783.
Treatment of Ulcus Cruris. H. Deutsch.—p. 783.
Infantilism, Hypoplasia and Similar Conditions in Female Genitalia. J. Novak.—p. 785.
Third International Cancer Congress of the "Leeuwenhoeck-Vereeniging" in Paris, March 18 and 19, 1930. B. Lipschütz.—p. 785.

Acetonuria of Cerebral Origin.—In four cases of cerebral hemorrhages with perforation of the ventricle, Bix noted acetonuria. An analysis of the cases proves the existence of an acetonuria of cerebral origin. The glycogen deficiency of the liver, which is the etiologic factor in other forms of ketonuria, cannot be the cause of the cerebral form. The author assumes the existence of a cerebral center that governs the intermediate metabolism, and, if stimulated, influences the liver in such a manner that disturbances develop in the normal course of the intermediate metabolism.

Prevention of Postvaccinal Encephalitis.—Ogrinz points out that postvaccinal encephalitis is most frequent during the years when the child's central system is taxed the most. He is convinced that rest during the period of vaccination will prevent cerebral complications. If fever develops, the child should be kept in bed for at least three weeks.

Zentralblatt für Chirurgie, Leipzig

57: 1521-1584 (June 21) 1930

*Mechanical Ileus Due to Adhesions: Operation: Death Caused by Absorption of Toxins. H. Heusser and W. Schär.—p. 1522.
Technic of Ligation of Internal Hemorrhoids. A. Peiser.—p. 1524.
New Instruments: Improved Rib Cutter. A. Brunner.—p. 1526.
Improved Prosthesis for Artificial Leg. E. Helwig.—p. 1528.
Symptomatology of Milker's Nodules. E. Lehmann.—p. 1529.
Actinomycosis of Back: Late Result of Shell Wound of Back. O. Boyksen.—p. 1532.
Bilateral Arthritis Deformans of Elbow Joint as Occupational Disease. K. Eichelbaum.—p. 1534.
An Illuminated Obturator Hook. H. Watermann.—p. 1538.
In Which Segment of Intestine is Tribromethanol Absorbed? W. Sebening.—p. 1539.
Acute Appendicitis with Symptoms of Necrosis of Pancreas. F. Metzler.—p. 1540.

Mechanical Ileus: Death from Absorption of Toxins.—Heusser and Schär relate the case of a boy, aged 3, who came to operation with a diagnosis of acute appendicitis. The appendix was gangrenous, perforated and embedded in an abscess containing foul smelling pus. It was removed. The patient was discharged on the twenty-fourth day feeling entirely well. Two weeks later (five and one-half weeks after the operation) the boy was returned with indefinite abdominal symptoms. He did not complain of pain and apparently felt quite well. A roentgen examination disclosed an obstruction in the upper half of the small intestine. The following day a laparotomy was performed. The bowel was found to be completely obstructed by a band of adhesion originating in the ileocecal region, about 2 cm. wide. The construction was relieved and almost immediately peristalsis occurred in the obstructed portion of intestine and part of its contents could be felt being carried onward. The boy recovered from the anesthetic and seemed to feel well, although his pulse was somewhat weak. Ten hours later the pulse suddenly became very weak and in half an hour the boy was dead. The authors are convinced that death in this case was due to the absorption of toxins from the affected part of the bowel which had not been passed on when peristalsis was restored. At the necropsy the heart muscle was cloudy and there was slight pulmonary emphysema.

57: 1585-1648 (June 28) 1930

Plastic Operations on Sphincter of Urinary Bladder. R. Goebell.—p. 1587.
Mechanism of Appearance of Pancreatic Ferments in Bile. H. L. Popper.—p. 1590.
*Thrombus Formation in Area Drained by Superior Mesenteric Veni in Boy Infested with Ascaris. W. Obadalek.—p. 1592.
Preoperative Care of Patients with Exophthalmic Goiter Who Must be Operated on for Other Lesions. F. Krauss.—p. 1596.
Appendicitis Associated with Paratyphoid. M. Rosenthal.—p. 1597.
Relation of Intra-Abdominal Pressure to Spinal Column in Cases of Trauma. A. Schanz.—p. 1598.
Achelis' Clamp for Fastening Drainage Tubes in Place. H. J. von Brandis.—p. 1600.

Thrombus in Zone of Superior Mesenteric Vein Caused by Ascaris.—Obadalek relates the case of a boy, aged 12, who came to the clinic with a diagnosis of appendical peritonitis. When the abdomen was opened there poured forth about a pint of serosanguinolent fluid containing many small blood coagula. The cecum and colon presented an entirely normal appearance. The appendix was situated retrocecally and was kinked on itself at a point where an adhesion to the colon was found. The terminal part of the ileum, about 40 cm., seemed to be normal. But the remainder of it as well as all of the jejunum was dilated, dark blue, and studded with small hematomas. The mesentery was greatly thickened, edematous, and studded with hemorrhages. Converging toward the root of the mesentery were many linear hemorrhages, which ended in a hematoma. There was a sharp line of demarcation between the healthy and the involved intestine. The affected bowel contained a dark bloody fluid and many ascarides. These were also found in large numbers in the healthy bowel. The author concludes that the thrombus formations in the branches of the superior mesenteric vein were caused by these parasites. The appendix was removed and a drain was placed in the Douglas pouch. The boy made an uneventful recovery, although no other treatment was given because of his weakened state. Ten months after the operation he was entirely well.

Finska Läkaresällskapets Handlingar, Helsingfors

72: 341-414 (May) 1930

Fixed Terminal Ileum: Anatomic Variations. L. Peterson.—p. 341.
*Primary Resection of Perforated Gastric Ulcer. H. Elving.—p. 385.
*Abortive Treatment of Syphilis. N. E. Wilén.—p. 393.

Primary Resection of Perforated Gastric Ulcer.—In eight of Elving's nine cases of perforated gastric ulcer with primary resection the patient recovered. He regards suture of the ulcer together with gastro-enterostomy as the method of choice, but in early cases with a good general condition primary resection is advised. In cases with an unfavorable prognosis simple closure is indicated, with gastric fistula if possible.

Abortive Treatment of Syphilis.—Wilén reports eighty-one cases of syphilis with abortive treatment and twelve cases of reinfection after abortive treatment.

Hospitalstidende, Copenhagen

73: 611-636 (June 5) 1930

*Pyelography After Intravenous Injection of Merbaphen. P. Freudenthal and E. Lunøe.—p. 611.
*Roentgen Photography of Bones at Base of Skull. V. Christiansen.—p. 623.

Pyelography After Intravenous Injection of Merbaphen.—Freudenthal and Lunøe have used the method in twelve cases; four are reported. They believe that indirect pyelography after an intravenous injection of merbaphen will be a valuable adjunct in the diagnosis of diseases of the urinary tract, particularly before surgical intervention.

Roentgen Photography of Bones at Base of Skull.—Christiansen says that after various pathologic conditions of the brain, usually acute ones in children, changes frequently occur in the bones at the base of the skull, which often persist throughout life. Clinical judgment of the individual cases should be based, not on the roentgen picture, but on the synthetic relation between the origin and course of the disease and the presence or absence of other neuro-ophthalmologic symptoms.

73: 637-664 (June 12) 1930

Blood Circulation of Brain. A. Krogh.—p. 637.
*Effect of Injection of Insulin on Gastric Secretion. K. Roholm.—p. 644.
*Inguinal Hernia: Subcutaneous Attachment of Spermatic Cord. J. P. Jensen.—p. 659.

Effect of Intravenous Injection of Insulin on Gastric Secretion.—Roholm's studies confirm the observation that insulin stimulates the gastric secretion in normal persons both quantitatively and qualitatively.

Inguinal Hernia: Subcutaneous Attachment of Spermatic Cord.—Jensen reports 122 cases in 96 patients, with 2 deaths. After-examination in 108 cases, mostly after one year, revealed recurrence in 12, or 11.11 per cent, all in hard-working men, 9 laterally in the cicatrix, 3 medially.

Svenska Läkaresällskapets Handlingar, Stockholm

56: 1-113, 1930

*Mechanism of Immunity Against Tuberculosis. E. Hedvall.—p. 1.

Mechanism of Immunity Against Tuberculosis.—Hedvall found substances with a bactericidal effect on tubercle bacilli in the normal serum of man and various animals, the effect being slow and rather weak. Immune serums of dogs and cats and the serum of tuberculous persons exerted no stronger bactericidal action on the tubercle bacilli than normal serums. The bactericidal substances showed complete agreement with the so-called lysins. Leukocytes, lymphocytes, thrombocytes and histiocytes of various animals did not affect the development of tuberculosis in guinea-pigs previously infected with tubercle bacilli; treatment with sodium hydroxide extracts of leukocytes, lymphocytes and histiocytes of tuberculous or healthy guinea-pigs and with alcohol-ether extracts or sodium hydroxide extracts of organs of tuberculous or healthy guinea-pigs and sodium hydroxide extracts of organs of tuberculous or healthy dogs was likewise ineffective.

Ugeskrift for Læger, Copenhagen

92: 563-590 (June 12) 1930

*Irregular Heart Action. C. Sonne.—p. 563.
*Benign Acute Idiopathic Serous Meningitis. M. S. Andersen and F. Wulff.—p. 572.
New Style Package of Bandages. V. Jensen.—p. 575.

Irregular Heart Action.—Sonne discusses the electrocardiogram and the significance of the various deflections recorded, the possibility of recognizing without electrocardiography the different anomalies indicated by the electrocardiogram, and the treatment of the various pathologic conditions.

Benign Acute Idiopathic Serous Meningitis.—On the basis of thirty-five cases, Andersen and Wulff describe a picture designated by them as benign acute idiopathic serous meningitis. While the symptomatology in the main resembles that of other forms of meningitis, the course is characterized by the rapid disappearance of the symptoms. The prognosis is good. Of the thirty patients with after-examination from one-half to eight years after the acute attack, twenty-eight are well; in two, chronic encephalitis developed.

92: 591-620 (June 19) 1930

*Ureter and Bladder Stones: Endovesical Treatment. O. Keller.—p. 591.
*Undulant Fever. J. Budtz-Olsen.—p. 596.
*Cancer: Increasing Frequency. L. C. Stage.—p. 600.
*Is Pus Containing Grains Pathognomonic for Actinomycosis? T. Eiken.—p. 602.
Number of Tuberculous Patients Among Student Nurses in Community Hospital. P. B. Nielsen.—p. 603.

Ureter and Bladder Stones: Endovesical Treatment.—Keller feels that his results encourage the use of endovesical methods whenever possible.

Undulant Fever: Treatment with Typhoid Vaccine.—In four of Budtz-Olsen's ten cases the fever disappeared after the first series of intramuscular injections of typhoid vaccine. In two it disappeared after the second series. In one case with defervescence after the first series there was a recurrence, in one case no effect was noted and in two the effect was uncertain, as the patients were afebrile at the start of the treatment.

Cancer: Increasing Frequency.—Stage shows that there has been practically no increase in the number of deaths from cancer in Copenhagen. In the provincial cities the mortality from cancer seems to be increasing.

Is Pus Containing Grains Pathognomonic for Actinomycosis?—In pus from two abscesses developing a few days apart and seemingly due to the same suppurative processes, Eiken found grains of the usual typical appearance of actinomyces; the first consisted of anaerobic actinomyces, the second, of anaerobic cocci. A diagnosis of actinomyces can thus be made only on a careful microscopic examination, preferably, he says, of gram-stained specimens, possibly in connection with culture tests.

CORRECTION

"Sugared Condensed Milk: Vitamin C Content."—In the abstract of the article from the *Archiv für Kinderheilkunde*, by A. Bakke (THE JOURNAL, August 30, p. 698), the last word should have read "scurvy" instead of "rickets."